Skyways

FOR BUSINESS

OFFICIAL PUBLICATION, NATIONAL BUSINESS AIRCRAFT ASSOCIATION

GUST 1958

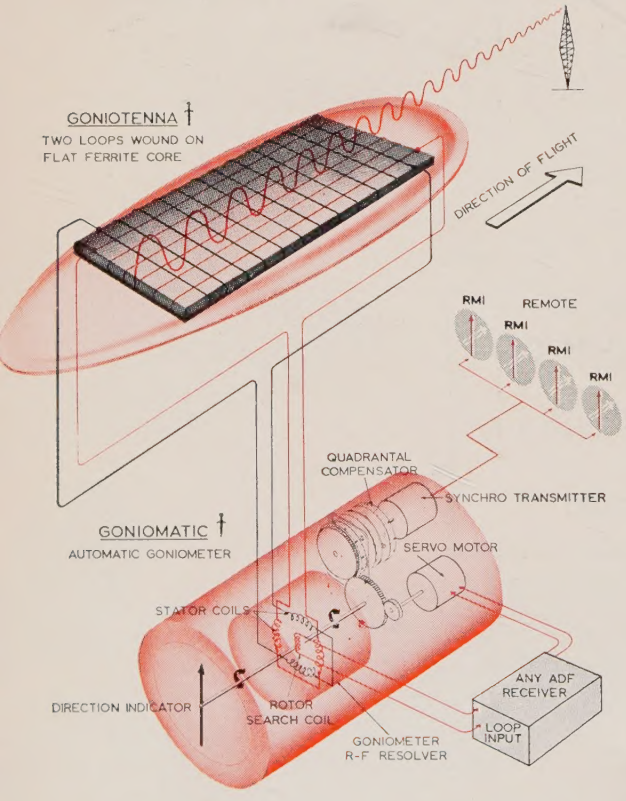
A MAJOR BREAK-THROUGH—

obsoletes ALL ADF LOOPS!

the new

LEAR GONIO*

IMPROVES PERFORMANCE — WORKS WITH ANY ADF!



NO LOOP MAINTENANCE

LOWERS DRAG & WEIGHT

DURABLE AND TROUBLE FREE: Goniotenna† hermetically sealed in plastic foam — no moving parts! Impervious to elements, vibration, temperature.

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RACK OR PANEL MOUNTED: Goniomatic† unit located in most ideal environment.

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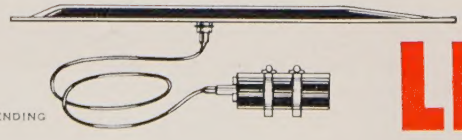

† LEAR TRADEMARK

* LEAR GONIO SYSTEM PATENTED AND PATENTS PENDING

Write or Wire for complete information:

LEAR LEARCAL DIVISION

3171 South Bundy Drive • Santa Monica, California

LC-53

Circle No. 1 on Reader Service Card

AUGUST, 1958

Skyways FOR BUSINESS

The official publication of the National Business Aircraft Association

COVER: Inspecting a drag brake of Lockheed's JetStar are, from left, Walt Hensleigh, co-pilot; Herbert Fisher, Chief of Aviation Development, Port of New York Authority, and flight evaluations pilot for Skyways; Tony Blalock, pilot of the twin-engine executive-size turbojet craft.

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1958's fast, new Cessna 310B offers you a new kind of comfort! It's Cessna's revolutionary "Comfort-Sealed" cabin, insulated from floor to ceiling and sound conditioned with double-heavy, vibration-free windshield and windows. The restful result: a quieter office-in-the-sky that wraps you in deep comfort while you cruise at 213 m.p.h.! Other new cabin features include new roominess, a brand new "double-capacity" heating and ventilating system, new adjustable seats, new functional instrument panel.

Fully retractable landing gear and split-type flaps, safety-tip tanks, broad-span tail group, performance-proven Continental engines in flat engine nacelles—these are just a few more of dozens of far-ahead features that make the new 310B so much easier to fly, so much faster, more powerful, and practical. Price: $59,950 with std. equip. f.a.f. Wichita. Call your Cessna dealer (Yellow Pages of phone book) or write CESSNA AIRCRAFT COMPANY, Dept. S-28, Wichita, Kan. Inquire about Cessna Lease Plans.

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Winner of U.S.A.F.
Light-Twin Competition*

5 GREAT CESSNAS 172 175 180 182 SKYLANE 310 THE COMPLETE AIR FLEET FOR EVERY BUSINESS NEED

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AIR YOUR VIEWS

Dear Editor,

I enjoyed your May issue of Skyways . . . especially the article on Airplanes, Money and Taxes.

With respect to this article, I feel that the approach that the writer takes to this question is undoubtedly sound and gives you the basis for arriving at some interesting answers. It appears, however, that the article could not have been written any later than 1953 since it talks of a capital gains tax rate of 26%, and this rate has not been in effect since then. Further, it does not discuss the accelerated depreciation methods which were authorized by the 1954 Internal Revenue Code. I think that an article of this type brought up to date would be very useful.

A. W. Effinger, Jr., sales manager
Santa Monica Aviation, Inc.
Santa Monica, Calif.

(The above was passed to author Robert K. Polson. His answer follows.—Ed.)

Dear Mr. Effinger,

Your sharp eyes spotted something our proof-reading accountants apparently missed. The capital gains tax rate *should* have been 25% instead of 26%. The figure of 74% in the formulas should then be 75%. This, of course, applies only to corporate taxes; not to personal income tax problems.

The omission of accelerated depreciation methods was deliberate. In attempting to get this idea across, the problem was to simplify both the mathematics and the scope of the material as much as possible. The straight-line method was chosen for this reason, and because it permitted setting up example problems which could be quickly worked. My apologies for any confusion this may have caused.

Robert K. Polson

Dear Herb (Fisher),

It was with a great deal of interest that I read your recent article in Skyways concerning Bill Lear's new "LIFE Navigation System." My thought is that this combination of instruments will definitely simplify and improve the pilot's job in the cockpit, especially over the high density areas.

Jim Richter, chief pilot
Columbia-Geneva Steel Div., U. S. Steel
San Francisco, Calif.

Dear Editor,

"See and Be Seen" (June, page 5)—has any progress been made with regard to that "little black box?" Have you any other information on the subject?

Don H. Grout
Link Aviation, Inc.
Binghampton, N. Y.

(New developments will be reported.—Ed.)

Dear Mr. (Richard) Groux,

I was very much impressed with your article entitled "Weather Wonderland" which appeared in the May 1958, issue of Skyways.

I took the liberty of sending a copy to the Congressman from our Michigan 11th District, Victor A. Knox, who immediately began doing everything he could from his point of view to help rectify the situation.

It's articles such as yours which go far to help the aviation picture become brighter.

Gordon L. Freedman, president
Freedman Artcraft Engineering Corp.
Charlevoix, Mich.

Dear editor,

The Superior Satellite, presented in a pilot's report in your July issue, bears a striking likeness to the Old Culver. Is it the same plane? modification?

The popularity today of two-place aircraft is exemplified by the sustained price of the Cessna 140 and 120 models in the used-plane market.

Maybe introduction of a "new" two-place plane will ease the lack-of-supply to fill the demand situation in which many of us find ourselves . . . not quite up to owning a four-place plane, and, on the other hand not able to find a suitable two-place model.

My business offers many opportunities for practical use of a plane. I look forward to more pilots' reports on small business type aircraft.

J. A. G. Smith
Sacramento, Calif.

(Satellite is development of Culver. See P.4, February. Cessna announced 2-place Model 150. See P.6, April.—Ed.)

Aviation Roundup

INCREASED IFR OPERATIONS by airlines and military coordinated and agreed upon with CAA to provide maximum and equitable use of present capacity of CAA air traffic control system. Most beneficial altitudes for both, between 10,000-20,000 feet. Hence, airline and military policies for more IFR operations will be essentially same as they pertain to en route flight along airways and in controlled airspace at and between these altitudes. At same time, military to defer max use of full IFR plan climbs, descents and en route operations below 10,000 ft because of current limited ATC system capacity.

★ ★ ★

AVIATION RADIO MANUFACTURERS ahead of Government agencies on TSO fiasco. Controversy centers now around confiscatory nature of proposed regulation with respect to useful life of existing operational equipment. Prominent manufacturers already in field with reasonably priced equipment exceeding TSO specs. Latest development, Lear's NAVCOM 13-lb, 5-watt LCN series transceiver (100 ch transmit/200 ch receive) and VOR/ILS/Mkr package. Specs were frozen *before* 58-5 proposal. In two versions, prices will start under $2,000. Full details in September Navicom section.

★ ★ ★

VICKERS ARMSTRONG LTD. AND L. B. SMITH AIRCRAFT CORP. made agreement for Smith to handle repair, conversion, modification of 4-engine turboprop Vickers Viscounts. Smith has performed Viscount executive interiors; new arrangement is first designation of the company as official U. S. repair station. Vickers to supply fuselage repair jig.

★ ★ ★

FIRST AMERICAN JETLINER, F-27, delivered to West Coast Airlines. Turboprop plane powered by two Rolls-Royce Dart engines and is completely air-conditioned and pressurized. Operations to be observed closely by firms with executive versions on order.

★ ★ ★

THE GARRETT CORP.'S AiResearch Aviation Service Div has modified more than 50 Convair 340s and 440s for executive use.

★ ★ ★

"LEARNING TO FLY" believed the first universal general coverage piece announced by National Aviation Trades Assn. President, William Lotzer. Booklet titled "Why, How, Where You Should Learn To Fly" result of need long recognized by NATA for sales and promotion piece slanted solely to fundamental theme of "taking to the air and learning to fly." Material supplements manufacturers' literature on individual products.

★ ★ ★

CAA REPORTS STUDENT PILOT certificate issuances have increased 78% to 80,290 last year, reflecting more interest in personal and business flying.

★ ★ ★

ALABAMA'S GROWING AIRPORT SYSTEM shows additional fields, new or reactivated, at Tuskegee AAB, 5,000 ft; Chapman, 2,200 ft, sod; Centerville, 2,200 ft, sod; Birmingham, 2,200 ft, sod; Mobile, 3,000 ft, sod; Moundville, 2,200 ft, sod; Fort Payne, 3,500 ft, paved (municipal) in planning stage; Lanett, 3,300 ft, paved (municipal) under construction; Centerville, 3,600 ft, sod. Fields in various stages of construction.

Aviation Roundup

AUTOMATIC COMMUNICATIONS SYSTEM contract awarded Radi Corp. of America and Airways Modernization Board for development of auto matic air-ground-air communications system (AGACS). Project calls for auto mated communications system compatible with data processing and display sys tem being developed by General Precision Laboratory, Inc., for AMB (see pag 19). Objective of project is system to reduce human handling of routine com munications, saves time and radio spectrum.

★ ★ ★

FUEL SYSTEMS TEST LABORATORY opened by Grumman Aircraft a Calverton, Long Island, N.Y., facility. All-new test lab makes it possible to con duct complete ground tests which simulate actual flight conditions and verif system designs. Sections of Grumman's jet-prop executive transport, the Gulf stream, have been tested in the lab. Full-scale operation to begin next month according to John Morley, in charge of lab operations.

★ ★ ★

NEW YORK AIRWAYS, INC., helicopter service, first of qualified air car riers to obtain funds under provisions of U.S. Government guaranteed loan legislation enacted last September to help purchase superior equipment. NYA to purchase five 15-passenger Vertol helicopters.

★ ★ ★

BELL X-14 JET VTOL made history with first flight rising from groun vertically in conventional horizontal position, flying airport traffic pattern hovering over spot and landing vertically. Flight made at Niagara Falls, N.Y. airport by David W. Howe, Bell test pilot.

★ ★ ★

DOMAN HELICOPTERS, INC., awarded $38,544 contract by Airways Mod ernization Board for attachment to flight simulators for visual simulation o approach, runway and taxiway lights as appearing under all weather condition Equipment to give Systems Analysis Directorate, AMB, research and analysi capability for investigation of airport lighting and marking, and human re actions to such visual aids.

★ ★ ★

AC SPARK PLUG DIV. receives first CAA approval to spark plug manufac turer for its quality control and production methods. Says Glen R. Fitzgerald director of AC engineering and equipment sales, ". . . proud to be first aviatio spark plug manufacturer to win CAA approval . . . covers 18 types of plug for many kinds of engines."

★ ★ ★

PRIVATE TVOR ACTIVATED for first time at Addison Airport, Dallas Tex. Terminal Visual Omni Range provides pilot with exact heading from hi location to the airport. CAA-approved Addison TVOR will operate throug voice facilities of Dallas Approach Center. Collins Radio is manufacturer.

★ ★ ★

DATELINES . . . Aug. 7, 8, 9, OX5 Club of America annual convention Hotel Statler, Los Angeles, Calif. . . . Aug. 19, 20, 21, 22, Western Electronic Show and Convention, Pan Pacific Auditorium and Ambassador Hotel, Lo Angeles, Calif. . . . Aug. 25, 26, 27, National Flying Club Assn. annual con vention, Hollywood Roosevelt Hotel, Hollywood, Calif. . . . Sept. 7, 8, 9, Inte national Northwest Aviation Council, Northern Hotel, Billings, Mont.

FIFTY EIGHT - FIVE

The price of progress is change. Progress is inevitable and the changes that come must be lived with. Change can be sudden and drastic or it can be subtle and transitional. The less devastating the impact of change, then the better and more feasible is the transition of progress.

CAB Draft Release 58-5 constitutes a change that can be economically disastrous to thousands of aircraft owners and can set civil aviation back many years.

Maybe 58-5 is merely a draft release sent up by CAB as a trial balloon. This Draft Release was probably never meant to be the final regulation that would cover standardization of electronic and radio gear in airplanes. Undoubtedly Draft Release 58-5 has been published to serve notice that there must be standards established for airborne electronic and radio gear.

Standards, as such, are important, and no one can deny their need. There are, however, many considerations to be given to the adoption of so-called TSO Standards for all aircraft.

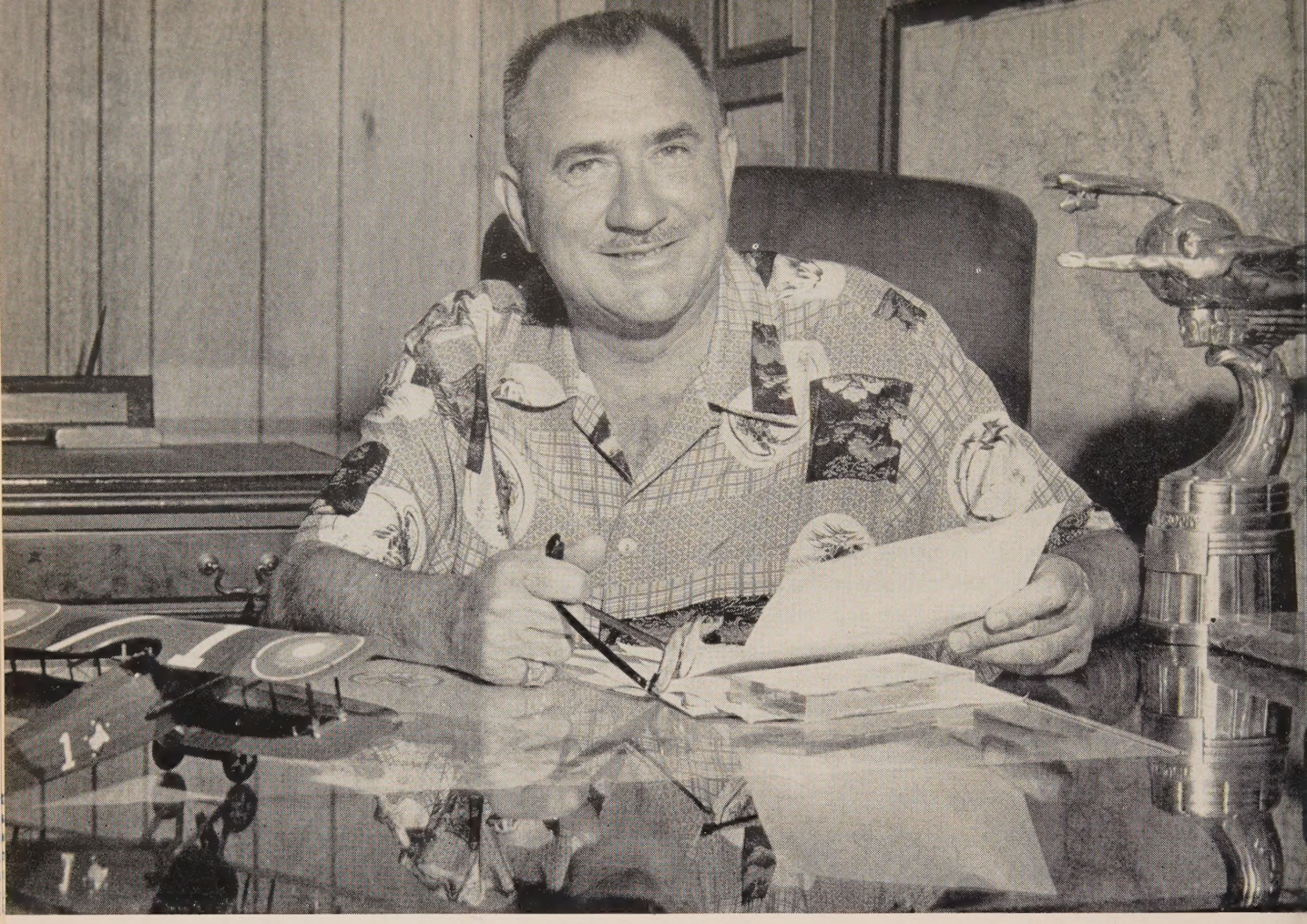
As written, Draft Release 58-5 would further strip competent A&P Licensed Mechanics of their already dwindling field of responsibility. As proposed, licensed A&P's, even those qualifying for a Class II or better FCC Radio Permit, would be precluded from doing basic wiring, from installing certified components, and hooking them up. It is doubted that such a move would be in the best interest of aviation.

As proposed, 58-5 would require all *major* repairs and alterations to be performed by a certified radio repair *station.* Trouble comes here in defining what is meant by *major.* Trouble also comes in not having enough repair stations, as such, to service the equipment of 92,000 civilian airplanes. Perhaps requirements could be met if individual licensed A&P Mechanics holding Class II or better FCC Radio Permits and not *stations* were recognized for major repairs and alterations.

As written, 58-5 indicates that *all* equipment (each and every piece) must be TSO. This could be interpreted to mean that an airplane equipped with only one TSO and no duplication would be legal. Whereas, an airplane equipped with one TSO set and a duplicate set not meeting TSO requirements would be illegal. There are those who seem to believe that it is safer to have two non-TSO sets rather than depend upon one TSO set.

Perhaps by the time this Draft Release has been polished with the inevitable friction that will come from GAFPG, AIA, AOPA, NBAA, and others, it will take a form much more subtle and transitional. Standards are important but not solely for standards' sake. The whole approach should be to rule out unnecessary expense, unnecessary weight and unnecessary ownership penalties; to reach the goal of accuracy in electronic performance by the simplest, the least expensive and most direct method.

Such an approach might not suit government bureaucracy but it will better serve aviation.



Paul Mantz, Hollywood's top aerial film director and crack-up artist. Champion-equipped, he's made $12 million mocking death.

Another in a series on unusual aircraft operations—
and why the world's top pilots, like all the
world's major airlines, use **CHAMPION SPARK PLUGS.**

Noted aviation authority reports on

The Mantz World

by HERB FISHER

Mr. Fisher
International
aviation authority,
veteran test pilot, author

Paul Mantz' world has been one of full-throttle scramble to do everything from the incredible to the sublime for the movie industry—often at the ends of the earth.

He's been acclaimed as Hollywood's "most nearly indispensable man." He's been hailed as one of aviation's most singular "greats." Film colony old-timers say the fact that he's alive at 54 makes him an oddity. The precision master (aviation's greybeards still call him "king of stunt men") has made his name and fortune outwitting personal disaster for 32 years.

Today Mantz is Hollywood's top aerial film director. A flamboyant personality in a habitat where flamboyance is the norm, Mantz remains the film capital's undisputed ace plane-crasher, museum-piece restorer, relic "stunt" flyer, aerial photographer—and is still introduced as the one-time personal owner of the

Mantz crash-lands B-17 for "Twelve O'Clock High"... only man ever to fly a 10-crew Flying Fortress alone. "They didn't want to risk hurting anyone else," he says. He manipulated co-pilot controls via steel welding rods attached.

"Our relics aren't flown for months at a time—yet, with Champions, they're always ready to take off," Jim Thompson, chief pilot, tells Mantz (l) and Elmer Sasse (r) of Sky Store, Champion representative.

world's seventh largest air force (485 war surplus planes he bought in 1947).

He pilots the Paul Mantz Air Service from Orange County Airport, Santa Ana, Calif. Company motto: "We charter anything, any time, any place." Off-beat service includes an airborne ambulance operation, a "Honeymoon Express" for Nevada-bound stars, and a global shuttle service for magnates. Rebuilding and maintenance of his 50-plane fleet—World War I relics to jets—goes on in three hangars covering 3½ acres.

"Spare" time, Mantz breaks international records. He's the only flyer to win the Bendix Trophy three times in a row. He holds several transcontinental speed records, plus the world's record for 46 consecutive outside loops in a stock plane—set 27 years ago.

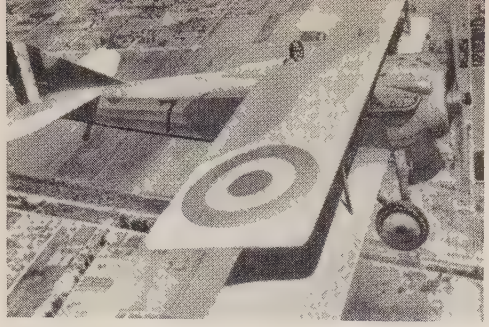
In other "spare" time, Mantz borate-bombs the Forest Service's most unruly fires . . . runs the Flying Yachtsman restaurant on Catalina Island . . . and relaxes with wife and son at home—"home" being an ultra-swank ocean-going yacht equipped with radar, loran gear, automatic pilot and radio direction finders. (Mantz was one of the first instrument flyers, has lived by electronics since.)

The Mantz world—from the incredible to the sublime . . .

The sublime: Consider the Mantz-directed aerial photography in such Cinerama extravaganzas as "Seven Wonders of the World" (a 5-month, 72,000-mile zigzag grind around the globe), "America the Beautiful," Zanuck's new "Deluxe Tour" . . . film spectaculars that made people the world over catch their breaths. The flying: "Hair-raising, at times," Mantz tells me . . .

Or those air thrillers like "Strategic Air Command." For many grueling weeks Mantz chased behemoth USAF B-36's in his B-25 camera plane to record this monumental sky drama. (During the war, Colonel Mantz trained and supervised combat camera crews in world-wide filming operations.)

The incredible: Those World War I



Mantz pilots sister ship to Rickenbacker's famed World War I Spad. All Mantz' famous vintage aircraft are Champion-fired, for dependability.

Jerry and Yank aeroplanes seen first in "Men with Wings" and several times since—they're Mantz-built or restored relics, and Mantz-flown. The Spirit of St. Louis in the recent Lindbergh movie by that name—a Mantz plane, flyable and authentic down to the last nut and bolt. The B-17 that cracked up in "Twelve O'Clock High." Mantz.

In directing "Spirit of St. Louis" aerial sequences, incidentally, Mantz had to labor along in a B-25 camera plane with landing gear down, flaps fully extended and prop in low pitch.

Remember the older films. The time Mantz brought movie-goers to their feet by diving a biplane into a hangar doorway and out the other side. Or the one where the goggled aviator bounced his aeroplane off a hangar roof. (Mantz lost his wheels on that one.) And those spectacular crashes into bunches of trees—Mantz losing his wings and nearly his tail. No trick shots in those days: When plot called for a crash or worse, Mantz stood in for the stars.

"For recreation, Herb? Well, I used to knock navigation lights off my buddies' wingtips with my own wingtips. I never knew why I got such a kick out of that—I was paying for the lights."

Though he's leaped from burning planes, had overzealous movie "powder men" set off dynamite too soon in "bombing" sequences, and had his relics knocked apart in the air, this "living legend" has been injured but *once*. A broken collarbone. And this on the ground, when a crash-landed plane turned on him as he was running from it.

"That's why I prefer 'precision pilot' to 'stunt man,'" Mantz says. "It takes a hell of a lot more than guts or craziness to fly the impossible assignments the script-writers dream up—or to film what the money says to film. It takes calculation, thinking, along with skill, sure—and *it takes the world's best in parts and equipment and ground maintenance.* I've swallowed a lot of raw heart up there, Herb, hoping my planes would make it.

"I've flown on Champion Spark Plugs (I use this as a prime example, since the ignition system is *vital* to the life and reliability of the engine) for 32 years.

"Champions have proved their dependability for me *all over the world, under all kinds of operating conditions, and in a truly unique variety of planes* . . . every-

"Lindbergh was astounded when he saw our replica of the Spirit of St. Louis," says Mantz, who directed aerial filming of the movie. "We used Champions on the entire Lindbergh flight—never changed a one. Hit severe weather over the Bay of Fundy and were mighty thankful for no ignition trouble."

thing from my fleets of antiques to my camera planes. I *know why* all the world's major airlines fly with Champions."

When man tries a first landing on the moon, Mantz will probably photograph it from a camera ship parked nearby.

CHAMPION SPARK PLUG CO.
TOLEDO 1, OHIO

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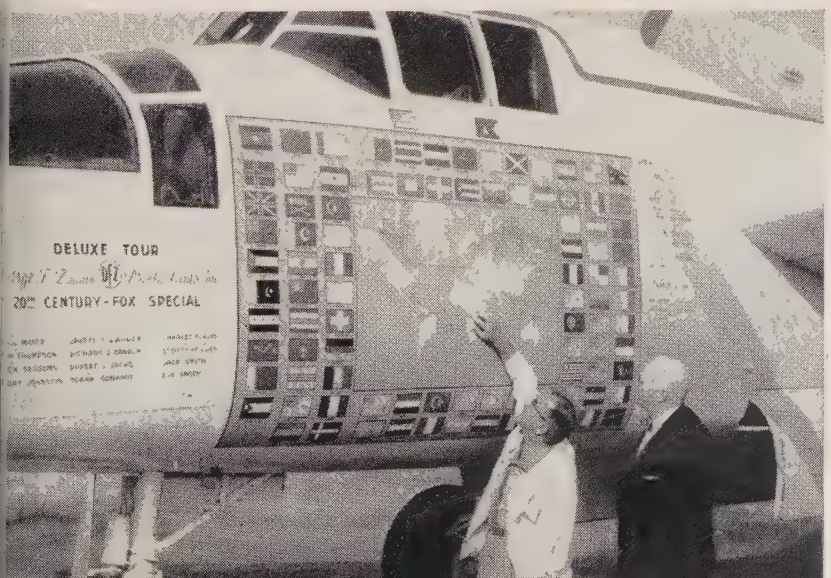
A Mantz world, conquered. Mantz shows Fisher where B-25 camera plane filmed wonders of world. Mantz has directed aerial sequences in major flying pictures for 20 years, supplied crews, support aircraft and vehicles, camera ships and vintage planes.



Mantz roars in between two trees, losing wings and nearly tail, in filming of "When Willie Comes Marching Home."

NBAA DIRECTOR'S NOTES

Budget relief in sight for the Weather Bureau!

That's the forecast which should result in improvement in aviation weather reporting services.

As the result of NBAA's constant prodding and as the result of NBAA members' personal contacts and letter writing to responsible Congressmen, the House and Senate appropriations committees are taking active steps to increase immediately the Weather Bureau's budget. This in turn, will give the first positive steps toward bringing adequate aviation weather reporting service to all of civil aviation.

Since early April, when NBAA's staff alerted NBAA members to the Bureau's serious deficiencies, and since May when these deficiencies were called to public attention in SKYWAYS (Weather Wonderland, May, 1958) NBAA has worked long and hard to bring the serious inadequacies and threats to air safety caused by poor aviation weather service to the attention of Congress.

We believe the results of this work will soon become apparent.

Concurrently with these budget hearings, NBAA has also been cooperating with the Weather Bureau in the examination of their 5-Year Plan to bring full-scale aviation weather coverage into being.

The 5-Year Plan has now received the backing of all segments of civil and military aviation. It will be presented to Congress for budgetary approval as soon as possible . . . perhaps before Congress adjourns for the summer.

The CAB's draft release 58-5 which proposes rule-making that would require all radios and all electronic navigational gear for IFR flight to meet air line standards is creating furor in the flying fraternity.

CAB frankly says that the proposal was sent up to them from CAA. Repeated requests by CAB to CAA for information regarding the economic impact, equipment affected, and other pertinent data have not been answered by CAA.

"It's up to the users to provide that information" seems to be the only reply that CAA could make to CAB.

Informed technical sources point out that the equipment manufacturers have done little to meet the demand for equipment that would meet the present TSO requirements and that could be put in aircraft under 12,500 lbs. without drastic weight, space, cost and electrical requirement penalties.

Until the present CAB proposal was issued, the manufacturers were able to point out that no rule-making was involved which would require TSO equipment in the smaller aircraft capable of IFR flight.

"We were wrong."

This frank admission by CAA Administrator Jim Pyle on the STC (Supplemental Type Certificate) procedures and resultant CAA action to improve a horrible mess, can only draw plaudits from all in the aviation field.

"We publicly and freely admit that we were wrong," Pyle has stated. "And what is more, when we find out that we are wrong on any other policy or procedure, the CAA will—as long as I am its Administrator—not only admit it, but we will take immediate action to correct that wrong."

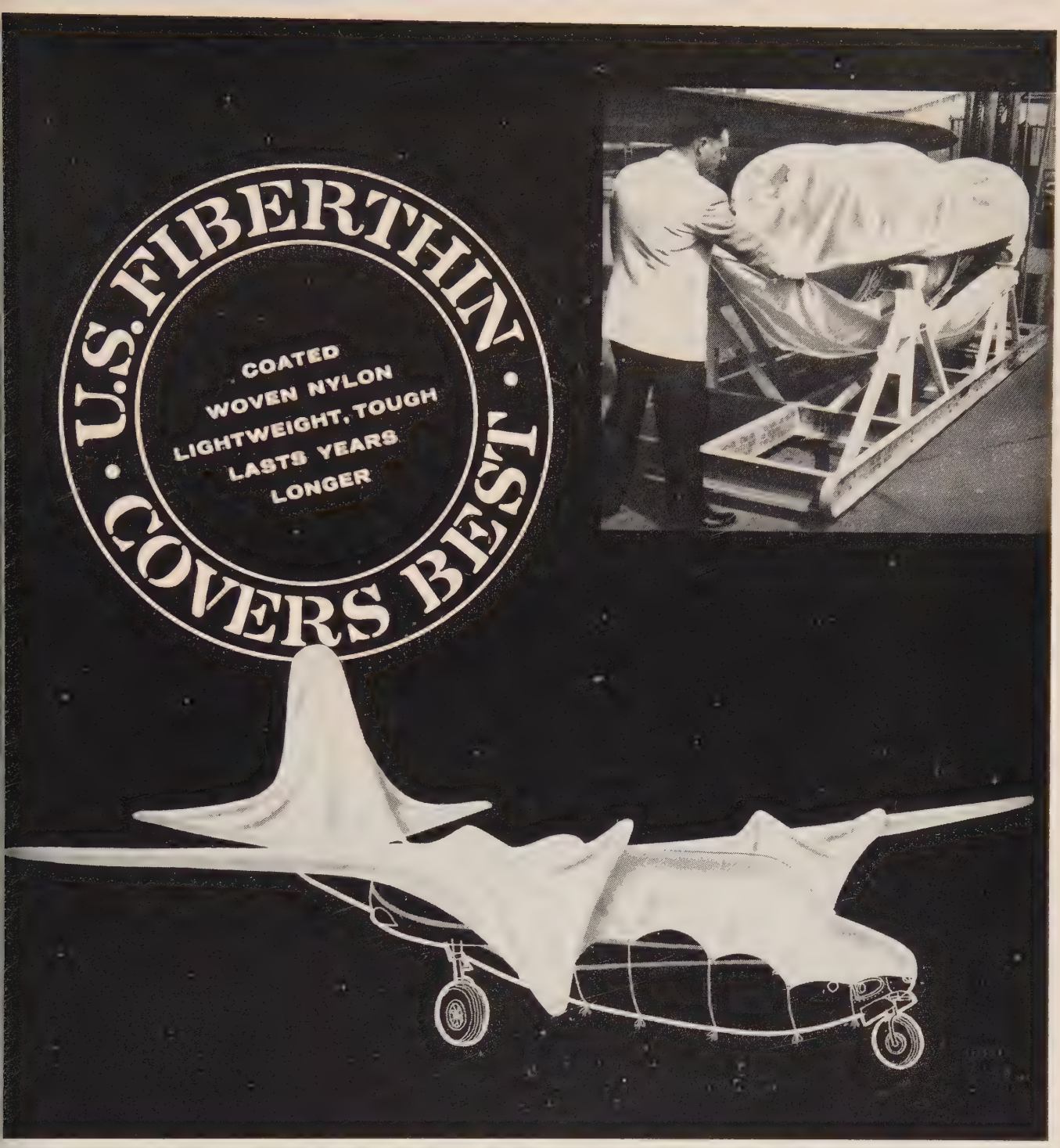
You can't help admiring a guy like that—and the admiration grows even greater when you realize a policy statement like this comes from a "Bureaucrat."

Oooops Dep't. . . . Gallant Senator Mike Monroney was performing a most choice introduction . . . the gal was luscious and just selected as Miss Civil Aviation at recent OKC CAA training center dedication . . . the Oklahoma Senator escorted the curvy number to meet CAA Administrator Jim Pyle.

Jim bowed to acknowledge the introduction. Gushed the lovely one, "Im sooo glad to meet you . . . I've read sooo many of your books about the war."

This gal must've been reading the ANC/PAT manual in a dim light.

Bill Lawton



U. S. FIBERTHIN®—MINIMUM WEIGHT...NON-ABSORBENT...STOWS AWAY COMPACTLY

Here is an all-weather protective covering that can't be matched for use in the aircraft field. U.S. Fiberthin is a remarkably light protective fabric yet it is far superior in tear strength. Woven of ribbon-like threads of durable nylon, coated with vinyl or neoprene, this modern covering fabric will not absorb water. It protects against rain, snow and sleet...stands up under gale-force winds. Extra light and easy to handle...stows away neatly in your plane. Available in a range of colors. U. S. Fiberthin also provides perfect protection for shipping airplane parts —as shown in the photo of the motor cover above. Ask your supplier for U. S. Fiberthin...or write for information.

U. S. Fiberthin Air Seal jet engine cover shown in photo above fabricated for Boeing Airplane Co. by Seattle Tent & Awning Co., Seattle, Washington

United States Rubber

Mishawaka, Indiana

Circle No. 9 on Reader Service Card

Suite 344

Mark Your Calendar *NOW*—

What for? NBAA's Eleventh Annual Meeting
When? September 22, 23, 24, 1958
Where? Bellevue Stratford Hotel, Phila., Pa.

Haven't seen enuf of my No. 1 boss, Bill Lawton, lately to know that I have one—in this office, at least. He has been on the jump since the first part of May. DCA/STL (Board of Directors Meeting); STL/LAX (Looking over hotel space for NBAA's 1960 Annual Meeting); LAX/CHI (Speak before the Chicago Association of Commerce and Industry Conference); and CHI/DCA (Before the Senate and House on the Federal Aviation Agency Mtgs. on CAR 58-5; on CAR 58-8; Oklahoma City (Celebration of the 20th Anniversary of the CAA Act). He came back on the Boeing 707. He hasn't returned to earth yet. We have come to the conclusion, "there just ain't enuf hours in the day."

WELCOME TO NBAA MEMBERSHIP—(REGULAR MEMBERSHIP)—VANCE BREESE, Beverly Hills, Calif., (Industrial property, subdivision and aviation consultant), operating Beechcraft D18S. Vance Breese, owner is the NBAA Rep. and Chief Pilot.

WILLIAM JANSS, Thermal, Calif., (Investments) operating a Cessna 310. William Janss, V.P. is NBAA Rep. and Chief Pilot.

HARTZELL INDUSTRIES, INC., Piqua, Ohio, (Constant speed and full feathering propellers) operating Beechcraft D18S and Cessna 182. Robert N. Hartzell, Pres. is NBAA Rep. James R. Hartzell is Chief Pilot and David Biermann, V.P., is executive in charge of aviation activities.

(ASSOCIATE MEMBERSHIP)—McDONNELL AIRCRAFT CORP., St. Louis, Mo., (Aircraft and Missile Mfgr.) operating Aero Commander 680. J. E. Forry, Mgr. Product Applications, is NBAA Rep.; R. C. Little is Chief Pilot; F. E. Christofferson, Mgr., Flt. Test Div. is executive in charge of aviation activities.

ROBBINS AVIATION CORP., Pontiac, Mich., (Aero-Commander distr., Service & Maintenance Center, CAA Radio Shop). L. J. Koons, V.P. & Gen. Mgr., is NBAA Rep.

INDEPENDENT AIRLINES ASSN., Wash., D.C., (Trade Association of Supplemental Airlines). John P. Doyle, Exec. Dir., is NBAA Rep.

McMILLAN INDUSTRIAL CORP., Ipswich, Mass., (Mfgr. radomes and microwave absorbers). Donald R. Humphreys, Mgr. sales & service, weather radome div., is NBAA Rep. and Chief Pilot.

NBAA's "money bags," John H. Winant, Sprague Electric Co. has been named Director of the Industrial Relations Dept. of the Electronic Industries Assn., the industry's trade organization, to serve a one-year term.

Also Bob Sprague, Jr., (formerly NBAA Bd. Member) has been named to head an industry-wide Walsh-Healey Committee for the electronic components industry.

Jeppesen & Co. is still expanding. Just a little over a year ago the firm opened an office in Germany. Now an office is being opened in Washington, which Jack H. Davis, Sales Eng. of Air Carrier Sales & Service, will head. Ken Skinner visited us last month introducing Jack and also Harry W. Zirkelback, Mgr. Military Services.

Our ol' friend, Cole Morrow, actually took time off from his busy schedule to visit us. Haven't heard much from him since he was promoted to Asst. V.P. of J. I. Case Co. and had to resign from our Board. Cole is looking for a good DC-3.

Storer Broadcasting Co., Miami Beach, has a DC-3 for sale. Clyde McClymonds says they are the proud owner of a Super Ventura.

(Continued on page 36)

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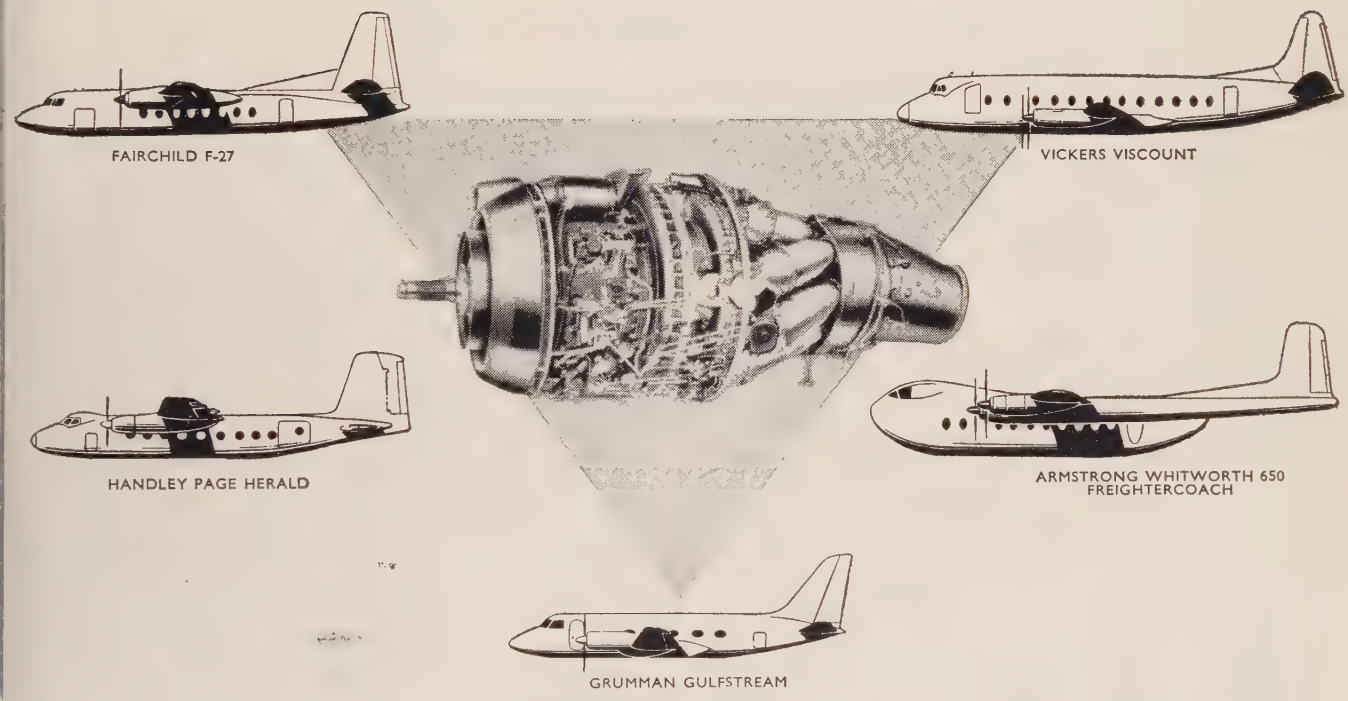

The Rolls-Royce Dart is the most proven prop-jet in the world and has flown over 4,000,000 hours in scheduled airline service.

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POWERPLANT *location is clearly shown in this photo of the JetStar. Production engine is being developed by Bristol Aero Engine Ltd. and Wright Aeronautical Div. It will be produced in U.S. by Wright and known as the TJ-37, an axial flow turbo-jet engine.*

HITCH YOUR BUSINESS TO A JETSTAR

by Herb Fisher

It has been said that the fastest human being in the world is the busy American businessman. At Westchester County Airport, New York, I laid fond hands on Lockheed's JetStar and realized that the aviation industry has caught up with him—and then some.

The Lockheed JetStar is America's first jet utility transport. It is a product of collective Lockheed imagination and technical competence, spearheaded by Kelly Johnson, Lockheed's Vice President for Engineering and Research Development at Burbank.

The Air Force has been asking the industry to develop a small jet utility transport for several years. It wanted such a plane to perform high-priority military missions and crew training jobs. Not every company rushed to do the job, for the Air Force asked that industry funds be used. Purchases would be on an "off-the-shelf" basis. Lockheed responded to this challenge by setting a production record. Once the designs had been firmed, a special projects team put the first JetStar in the air within 34 weeks!

Before flying Lockheed's JetStar I did a little hangar flying on the subject with the Lockheed personnel assigned to the JetStar program.

Tony Blalock, pilot of the executive size jet transport, told me some of his impressions of the plane . . . "not only does it look simple to fly, but it is simple and easy to maintain." Tony, who has been with Lockheed since 1955, has been flying the JetStar since March of this year when he picked it up at Edwards Air Force Base in California. He pointed out that this prototype is powered by two Bristol Orpheus jet engines. Production models, however, will have the same engines but built by Curtiss-Wright and designated TJ-37. He holds high regard for this engine, describing it as the "best little turbojet engine" he's flown. He elaborated with the example that the plane can accelerate from flight idle 2500 RPM to maximum 10,000 RPM in four-and-a-half seconds.

The aircraft I flew at Westchester County was the second of two prototypes. The first JetStar was out at Edwards Air Force Base, breezing through Air Force evaluation tests. Even before getting into the plane, you *know* that it is fast. Of course, I had already learned that the plane had made the flight from Pittsburgh to Westchester County Airport in an amazing 32 minutes! On June 17, Lockheed put the icing on the cake by boxing the United States . . . Edwards AFB, Calif., to McChord AFB, Wash., to Westover AFB, Mass., to McCoy AFB (Orlando) Fla., and back to Edwards in 17 hours 50 minutes total elapsed time of which 14:50 was enroute. What company wouldn't like to schedule a high-salaried executive's itinerary something like this? Average cruise for the course was over 520 mph, including a 100 kt headwind part of the way and climb to 46,000 maximum cruising altitude.

I was especially impressed when they told me that they deliberately operated under ATC jurisdiction rather than remaining free to pick optimum altitudes at all times as in most record or demonstration operations. They said they even made a radar approach at Westover.

The size of the JetStar lies between the C-45 and the C-47. Actually, it is 58′ 10″ long, 7′ 1″ wide, and 20′ 6″ high. I heard several people comparing it to a scaled-down Caravelle. To set the record straight, Lockheed has conducted research on this particular type of design for years, including the most striking feature, the location of the two Curtiss-Wright TJ-37 turbo jet engines (Bristol Orpheus series). They are mounted high on the rear of the fuselage, behind the pressurized cabin, with the inlets above and ahead of the trailing edge of the wing.

The reason for this configuration was the emphasis on one commodity above all others: Safety. The JetStar's low wing, swept back at 34 degrees and measuring 53′ 8″, protects the engines from any rocks, dirt or debris thrown up by the gear. Also, as a business aircraft, it will inevitably operate into airports where the runway and ramp policing cannot be as effective or debris-free as at military controlled aerodromes. The familiar vulnerability to expensive, crippling damage from ingestion of even minor hard objects, as well as the less familiar invisible hazard to line and maintenance personnel of jet intakes, is virtually eliminated by this means. In the event of a gear-up landing, the engines are in a protected area. Both passengers and fuel tanks are well isolated from

JETSTAR TEST PILOT *Tony Blalock, right, performs a cockpit check out for veteran test pilot Herb Fisher prior to flight to 40,000 feet for Fisher's evaluation of plane.*

any dangers resulting from a possible turbine or compressor failure. Since no part of the airframe lies near the exhaust wake, buffeting, vibration, and fatigue are reduced to a minimum.

Even the aerodynamic characteristics of the JetStar are improved with the aft engine location, for the inlets lie in the flow of air coming over the top of the wing, thereby increasing ram recovery. The best proof of this is the fact that the JetStar will exceed 630 miles per hour and can climb to over 46,000 feet. Cabin pressure at this altitude will be reduced to a comfortable 8,000. The plane normally cruises between 500 and 550 mph.

Another interesting feature about the pressurization system proves that Lockheed believes in automation. Should decompression occur, or should cabin pressure go above 14,000 feet, red lights start flashing, a horn starts blowing, and oxygen masks drop out automatically from doors attached to each seat. All that the passengers will be required to do will be to pick up their masks and put them on. The cabin has been designed to withstand pressures up to 19 psi. The windows have safety vinyl glass that have already withstood sledge hammer blows while under 19 psi.

I flew the JetStar with her regular crew, Homer "Tony" Blalock, pilot, and Walter Hensleigh, copilot. They are two excellent sales engineering pilots, are all business in the cockpit, and they know their aircraft inside out.

My first surprise came immediately after releasing the brakes. Unlike many turbo jet aircraft, the JetStar has a very high acceleration rate. This becomes more plausible when you realize that in normal configuration, without external fuel, the maximum gross weight at take-off is only 28,820 pounds. To push this weight, the two TJ-37 engines each develop a sea level military thrust of 4,850 pounds guaranteed, and a continuous thrust of 3,600 pounds apiece. Before you realize it the JetStar has broken ground and the hydraulic system brings the gear up in a surprising four seconds.

At sea level the rate of climb exceeded 6,000 feet per minute. It took eleven minutes to reach 30,000; with a full load the JetStar will reach 40,000 in about 21 minutes.

I trimmed for hands off flight at 37,000. We chopped one engine, but I'm sure that our passengers never knew it for the yaw was hardly noticeable. My second surprise came when Tony told me that the plane's single-engine ceiling was 25,000!

Any questions I might have entertained about comfort were answered on this first flight. Added to the negligible vibration and to the really effective cabin pressurization system, the JetStar features an equally effective air-conditioning system. The air, cooled by an air cycle refrigeration system, is circulated through a low-speed overhead system with thirteen individual, adjustable outlets. Even distribution of the air is assured by exhaust ports on the side walls below the seats and in the aisle-way. Ground cooling is accomplished with outside air supply or with only one engine running. The question of comfort in the JetStar is academic anyway. When you can fly from Burbank, California, to Marietta, Georgia, in less than three and a half hours, you really don't have enough time to become uncomfortable.

I was further impressed with the extremely sensitive handling characteristics of the JetStar. An indication of its responsiveness is the fact that the aircraft has a rate of roll of 100 degrees a second which, I understand, is faster than that of the F-86. At one point we throttled back to obtain 120 knots. Then we gave it full bore. The response was instantaneous and the rate of acceleration increased so rapidly that all the corporation pilots on board couldn't believe their eyes, all of which were fastened on the air speed indicator. This is a comforting thought in the event of a go-around.

The JetStar can be slow-flown to a speed of 90 knots. This is made possible by leading edge slats and automatic-positioning type, slotted flaps. The ailerons and elevator are hydraulically boosted and the rudder is aerodynamically boosted for high speed operation. Lateral and directional trim is accomplished by conventional tabs. and longitudinal trim is effected with an adjustable stabilizer.

Considering the size of the JetStar, the range is quite adequate. With a full load of ten passengers and baggage and with fuel only in the integral wing tanks, the plane carries 1640 gallons, giving it a range of 1,800 miles at 45,000,

(Continued on page 36)

PERFORMANCE

	Range Configuration	
	Normal	*Intermediate*
Top Speed (mph)	613	600
Cruising Speed, optimum (mph)	510	502
Stall Speed, best condition, maximum landing weight 26,000 lbs (mph)	106	106
Rate of climb, sea level, maximum (fpm)	6,400	5,000
Absolute ceiling, normal (ft)	49,000	43,500
Range:		
Standard fuel, optimum range (mi)	1,785	—
Standard and auxiliary fuel, optimum (mi)	—	2,620
Fuel Capacity, standard (gals)	1,676	2,276

WEIGHTS

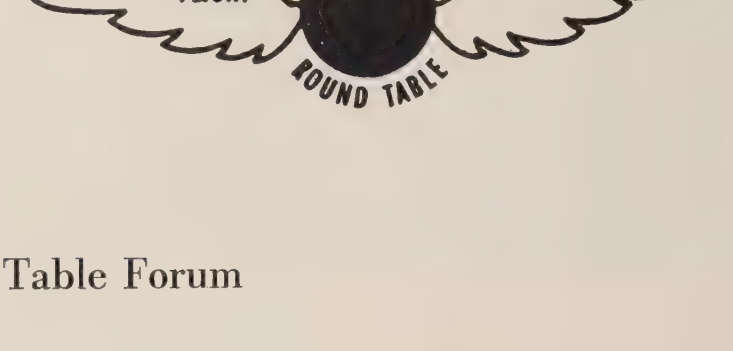
Empty weight (lbs)	15,290	15,794
Gross weight (lbs)	28,870	33,782

DIMENSIONS

Wing Span (ft)	53.7	Length (ft)	58.8
Wing Sweep (degrees)	34	Height (ft)	20.5

FEATURES

Pressurization—8,000 feet at 45,000-foot altitude.
Aisle Headroom—6 feet 2 inches.
All Weather Capability.



Skyways Round Table Forum

looks at

AVIATION MAINTENANCE STANDARDS

- The biggest part of your flying dollar goes into maintenance.—Weitz

- Before our shop will proceed with an engine overhaul, we have a definite understanding with each customer what he is to get.—Scott

- One thing that must be taken into consideration today is that the life of the engine between necessary top overhauls has increased considerably.—Rhodes

- Beech, CAA and Pratt & Whitney say that all that is required to use 80/87 octane legally, is to get someone to bear the expense of the necessary flight test.—Rhodes

- If a repair is a matter of judgment that does not affect the safety of the airplane, we leave the decision to the customer.—Kelley

- I think a repair shop should absorb the charge for all the time it takes to locate and repair a boner that the shop admits making.—Mogensen

- You cannot make a repair cost estimate on an engine sight unseen unless you just want to gamble.—Scott

- Many owners are confused about the so-called "permanent" airworthiness certificate, believing that a 100-hour check renews it.—Weitz

- When 50% of the spark plug ground electrode has eroded, the spark plug should be replaced.—Gossett

- In "equalized" maintenance plan, we divide inspections and component removals among 100-hour inspections to avoid long "out of service" periods.—Kovac

"Today, Skyways is holding one of its regular Round Table forums. The subject, Aviation Maintenance Standards, is of vital interest to all business flying. The discussion will be moderated by George Weitz," said Arthur Horst of Reading Aviation Service to introduce the program.

George H. Weitz, (*General Safety Division, CAA*) **Moderator:** I feel keenly about maintenance, especially looking ahead when, in the efforts to make the machine simpler for the pilot, it becomes more and more complex for the engineer and the maintenance man. We have electronics, higher horse-power, new materials, new methods of fabrication. It's a real challenge to the maintenance man. It's also a challenge to the owner who has to foot the bill. The biggest part of your flying dollar goes into maintenance.

The first subject has to do with your initial contact with the maintenance facility on a job. In CAA we have received complaints by people who felt they got a poor job and were "taken" by the operator. We investigate these things, and in 95% of the cases it turns out to be a misunderstanding. It's a two-way street. Before the facility can give you a price on your job, they must know what you have in mind. It requires planning. So, what we are trying to discuss here is a job specification. I'd like to start with Ed Kelley from Reading Aviation.

E. D. Kelley, (*Reading Aviation Service*): We have taken the approach that we would like to spend as much time with the customer as he can afford, to go over his requirements to come to an agreement before the job is started. In many cases it can't be done, but in scheduled maintenance, I think it is being accomplished today. The end result is a happy customer. If changes in specification arise on the job, and they usually do, we like to get the consent of the pilot, or other representative, here . . . prior to going ahead with the work.

Weitz: The more complex and detailed the job, the more of this element of doubt as to the charge. Paul Kovac has had

ANELISTS *included, (l-r) A. E. Gossett, AC Spark Plug; Joe hodes, Atlantic Aviation; E. D. Kelley, Reading Aviation; George Weitz, CAA, moderator; E. P. Kovac, Lockheed Internat'l; Robert Scott, Airwork; Thomas Allegretti, Champion Spark Plug Co.*

onsiderable experience in the large type job that requires iis specification.

. P. Kovac, (*Lockheed Aircraft Service, International*): We ave somewhat similar problems of getting maintenance pecifications together before an aircraft is brought into the iop. This function is handled by the engineering staff. From ngineering, these specs go to our Contract Administrator ho, in turn, gets together with an Estimator to determine ie price. Before the work is started the price is submitted) the customer for his approval. The price is then re-eviewed as the "over and above times" are determined. In iat way there is a minimum amount of dissatisfaction and onfusion.

Veitz: I'd like to ask Bob Scott how he finds this problem ith respect to engine overhaul.

obert S. Scott, (*Airwork Corp.*): Our problem is a bit dif-erent. We have what is known as a customer questionnaire or each engine that we overhaul, if it's a Pratt-Whitney, a 85, an 1830, a 2000, a 2800 or Lycoming Continental. Before ur shop will proceed with an engine overhaul, we have a efinite understanding with each customer what he is to get.)ne of our representatives will talk to the customer. If he has n R-985, for example, this customer questionnaire is about four or five page affair. They're generally very simple to nswer . . . yes, no or checkmarks, or maybe under "further emarks." First, we want to know, are we dealing with the wner himself, with a fixed base operator, or whom? We efer to all R-985's as 985's, but, individually, there's quite bit of difference. One engine might be a "failure." We have) draw that out. Did this engine fit a twin Beech, or what? Vhat type magnetos does he use? Does he use American osch, Scintilla, or what? Then we have types of propeller ystems that are involved. Is it hydromatic, is it counter-eight? Maybe he's using one of the various types of con-ersions that are out on the market today. He may be using ill Conrad's kit, he may be using standard Pratt-Whitney baffles, so we must be sure it goes back together exactly the way he wants it. We've always been bothered with the problem of rust in an engine after overhaul. Especially after it has been run. We always recommend that the engine be preserved prior to test and storage. When the customer wants it, we get it out of the barn, de-preserve it, test it, preserve it and ship it . . . or give it to him any way he wants it.

Regarding service bulletins, we present the customer with a list of bulletins. We have devised this list of service bulletins that in our experience gives the best possible job. These cover the mandatory bulletins and the so-called optionals which increase the longevity of the engine. In addition, we have so-called optionals that, in this type of operation, he may require. After this is signed, it goes in the shop. The customer has his copy . . . the shop has its copy, service department, etc. That's how we do it.

Weitz: Everybody has a problem with job specifications on the installation of electronics and radio equipment. The customer wants a radio put in, and he needs the best advice he can get. He relies on outside technical advice or the shop. Kelley has installed a great number of these radios. How might the problem be eased somewhat from the standpoint of the owner, Ed?

Kelley: In the larger, more complex installations we have great help from organizations such as Airinc. And I think persons using that type of equipment are familiar with the basic standards insofar as instrumentation and equipment. It depends on the type of flying that the particular airplane does. The area where the airplane is used primarily has a bearing on it. We have a branch set up with technical people. We also call in our pilots who are familiar with what's required under different conditions of flight. We also have the never-ending problem, the change of frequencies in communications. Don't try to overload a smaller airplane. Try to take a practical view of the problem. Maybe the intent is to keep the airplane for another year with a minimum effort.

MODERATOR

GEORGE H. WEITZ, chief, general maintenance branch, CAA. In aviation since 1926. Is Lt. Col., USMC-Res.

PANEL MEMBERS WHO PARTICIPATED IN THE ROUNDTABLE DISCUSSION

E. DESMOND KELLEY, director of customer maintenance, Reading Aviation Service Co., Reading, Pa., since 1946. Former electronic shop foreman and manager.

THOMAS D. ALLEGRETTI, aviation representative, Champion Spark Plug Co., Toledo, O., since 1956. Formerly with Eastern Airlines, Colonial Airlines and Boeing School of Aeronautics.

KARL E. VOELTER, general aviation advisor, CAA. In civil and military aviation 40 years. Marine Corps pilot, 24 years. Former fixed base operator. Was with Curtiss-Wright. Experienced racing and test pilot.

BILL HOLECEK, service manager, Hawthorne Flying Service, Charleston, S.C. Private pilot. In present position since 1952. Studied at Aeronautical University, Chicago. Had own shop for three years.

ROBERT S. SCOTT, 28 years in aviation. With Aero Service Corp. 1941-1952. From '52 to present with Airwork Corp. Now is Sr. Field Service Engineer & Branch Mgr. at Berea, Ohio. Engine experience from OX5 to P&W 4360; airframe from Curtiss JN4 to DC-6.

ALFRED E. CUSTER, manager of aviation, Northern Natural Gas Co., Omaha, Neb. With Slick Airways for 10 years as line captain and executive pilot for Board Chairman. Aviation manager Hal Roach Studios for two years. Four years in USAF ATC.

E. PAUL KOVAC, senior service power plant engineer, Lockheed Aircraft Service, International. Graduate of N.Y.U., BS in Mechanical Engineering. Was 15 years with American Airlines' Engineering in power plant development.

ALLAN H. MOGENSEN, head, Work Simplification Conferences, Lake Placid, N.Y. Professor, Industrial Engineering, Univ. of Rochester. Member AOPA, NPA, NAA, Wings Club.

JOSEPH L. RHODES, manager, Service Dept., Atlantic Aviation Corp., Wilmington, Del. Has been with Atlantic 13 years. Is vice president of National Aviation Trades Association. Was Navy pilot during WWII.

ALLISON E. GOSSETT, assistant director of aviation sales, AC Spark Plug Div., General Motors Corp. Was WWII navy pilot, and flew various prop and jet aircraft. Prior to AC, he was with Hiller Helicopters for five years.

Try to fit him out with a good system that will carry him through that period.

Again, we sit down with the customer and find out what his type of flying is. Does he have any idea of going into instrument flying? If he does, we will recommend a package for him. We're not going to try to outsell one brand from the other. Each piece is built for a use. It's a matter of trying to put that particular piece into a man's airplane if it's his requirement.

Weitz: At this point, we're going to call on the audience to ask questions regarding this particular subject. I think the panel would like to get some ideas on this subject from the owners. Karl, can you lead off?

K. E. Voelter, (*General Aviation Advisor, CAA*) : Referring to that part of the public concerned with general aviation, their chief concern is in the cost of servicing small engines. Whereas some years ago they could do it very economically, they now maintain that the cost has gone so high that they just can't afford to do the kind of flying to which they've been accustomed. I would like to ask what would be an appropriate charge for general service and for service comparable to a top overhaul of a small engine?

J. L. Rhodes, (*Atlantic Aviation Corp.*) : We haven't run into too much top overhaul requirements on these little engines since the newer ones have all been pretty good. We do occasionally top overhaul some of the engines, however, and an appropriate charge for a 90 hp would be around $100.

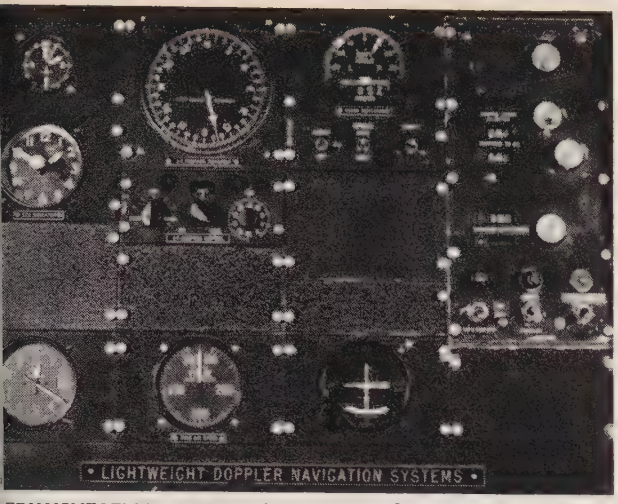
We have found that if a top overhaul is deemed necessary on an E-185 Continental or larger engine, there's generally a pretty good reason for it, and maybe other things are affected. It may not be good economy to actually top overhaul the engine . . . you may wind up with trouble later.

One thing that must be taken into consideration today is that the life of the engine between necessary top overhaul has increased considerably. You can probably run the engine twice as long as you did in the old days, then change the engines without a top overhaul, and in the end, the cost of operation over a period of time will probably come out to the same amount of money.

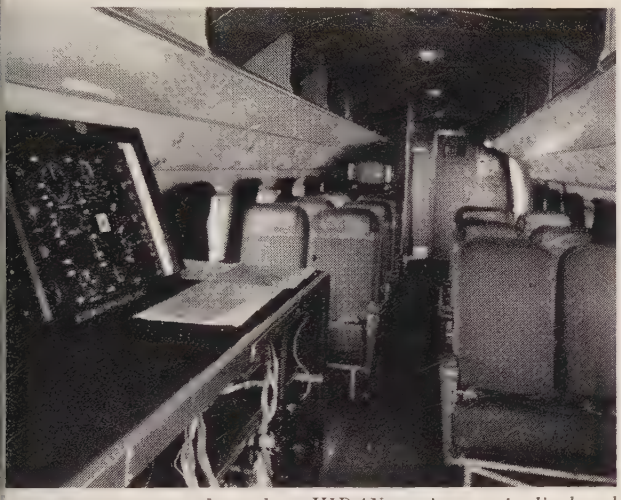
A. E. Custer, (*Northern Natural Gas Co.*) : My question has to do with an R-985 and the pretty wornout controversy on fuel—87 vs. 91. I wrote Pratt-Whitney, and their answer was a little ambiguous. They recommended 87 but that depended largely on the installation and certification of the engine in a particular airplane. I wrote Beech, and they said for the D18, 80/87 was desirable and recommended, but on the Super-18, the tanks themselves are placarded 91, . . . as far as I'm aware it's ostensibly the same engine. It has been my limited experience that the majority of operators is using 80/87, due to the lower lead content, etc. What is the thinking on the fuel problem?

Scott: First of all the R-985 engine has been certificated on 80/87 fuel . . . you can pull maximum continuous horsepower of 450 on 80/87 fuel. The big thing is this . . . when you use 91/96 fuel your higher lead content in the fuel has a tendency to bleed into the end of the lubrication system of the engine through the exhaust gases, valve guide, etc., and eventually find its way into lead sludge within the engine. It also causes more valve guide erosion because of the higher lead content. You don't need it . . . except, I will say this . . . that it's a known fact, that under certain conditions, it is advisable to use it to combat an extreme condition—taking off with a heavily loaded aircraft under extremely high ground temperatures and your detonation level is lower. You're apt not to get into detonation with 91/96 fuel a

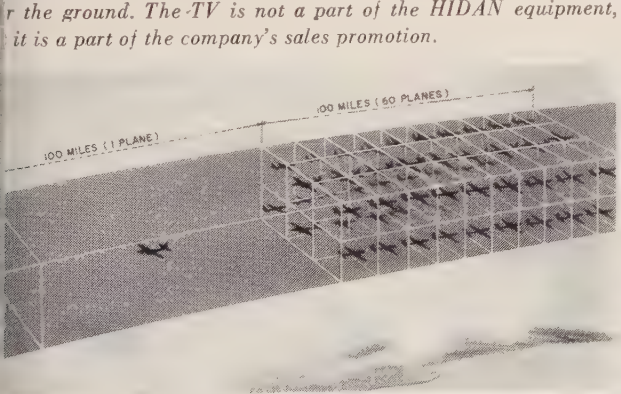
(Continued on page 48)



TRUMENTATION DISPLAY *is one type which may be used with HIDAN method. Equipment's flexibility makes it possible to or arrangement of indicators as needed. Here, clock at left s pilot what time of arrival at next check point is. Dial at top it gives drift angle. Distance to go and distance off course are wn by numerical indicators at the right.*



3 INTERIOR VIEW *shows how HIDAN equipment is displayed demonstration in the General Precision Equipment Corp.'s busi- s aircraft. A closed circuit television at the rear of the cabin was d in the flight demonstration to show the position of the plane r the ground. The TV is not a part of the HIDAN equipment, it is a part of the company's sales promotion.*



CREASED AIRSPACE USE *is possible with the new navigation thod as illustrated in the drawing. At left, a 600-mph jet will uire 100 miles of reserved airspace to provide minimum safety. cisely navigated aircraft, as in right of the drawing, can adhere sely to flight plan so that airspace envelopes now required for h has potential of being greatly reduced.*

GPL DEMONSTRATES NEW HIDAN

by Lindy Boyes

Company's DC-3 used to introduce their navigation equipment product to potential buyers

"We are convinced that self-contained navigation is the answer to today's crowded airways," Herman G. Place, president of General Precision Laboratory Inc., said by way of introducing for the first time publicly a new airborne system of air navigation designed to simplify the problem of air traffic control and to reduce the hazard of mid-air collisions. The equipment is called High Density Air Navigation (HIDAN) method of flight control.

Edwin A. Link, president of GPL's parent organization, General Precision Equipment Corp., described the air traffic problem as primarily one of separation and, he added, that the basis of "economical separation" is precise navigation with respect to time. Here fits HIDAN which includes fully-automatic, self-contained navigational and control equipment to be carried in the airplane itself.

One of the arguments favoring the new method is that many aircraft can be handled in an unofficial "formation flight" basis in controlled airspace rather than being strung out for separation. This leaves a great deal of "free" airspace which can be used by the many thousands of other aircraft not equipped with self-contained navigation.

The method consists of two parts. One is Radan which supplies continuous ground speed and drift angle (see Skyways January '58, p. 36). The so-called Doppler effect is used here for the first time in a practical application to air traffic control. (Described by GPL, Doppler is a set of two forward and two rear microwave beams which radiate from the aircraft to the ground, much as if the ship were "walking" on four invisible spidery legs.)

If the pilot fails to stay within the programmed flight segment or gets off course, the HIDAN instruments immediately show what must be done to get back on plan.

Link charged that there is much "cluttered" thinking going on today with the air traffic control problem. In fact, some thinking is ging overboard, he said. "For instance, there is a great deal of talk about anti-collision devices. The best anti-collision device there is is our eyes; even then, if you spot someone walking toward you and you both take the same evasive action, you still collide with one another."

Radar as a secondary aid is fine, Link said, but not as a "primary thing to keep us from colliding." There are too many variables.

System offers two main features . . . automatic air-ground data transmission and a simplified navigation. Further, the equipment assists the pilot to make good his flight plan with remarkable accuracy. His approach and touchdown times can be controlled by simply adjusting his enroute ground speed or flight track as indicated by the equipment.

On GPL's DC-3 demonstration flight from Westchester County Airport (White Plains, N.Y.) to Danbury and Bridgeport, Conn., back to Westchester, this writer was impressed by time-track control capabilities inherent in the system. This principle of positive adherence to control has become a primary necessity for maximum safe utilization of the airspace.

Circle No. 12 on Reader Service Card

PLANE FAX

by STANDARD OIL COMPANY OF CALIFORNIA

Solo over the Polar Cap...a light plane record

Peter Gluckmann, San Francisco's Flying Jeweler, is used to accomplishing the impossible with his 225 h.p. Beechcraft Bonanza. And, this Spring, the "impossible" was his daring solo flight over the north polar cap in a single-engine light plane — a world record!

"This was the hardest flight of my life — on me and on my plane," says Mr. Gluckmann. "Every part of the engine had to be in excellent condition and stay in excellent condition — the North Pole is no place to land.

"I used RPM Aviation Oil Compounded because long experience has taught me I can depend on it to keep my engine running smoothly under all flying conditions. "That's the single most important factor in long-distan flying over water, ice caps and mountains. Moreover, the nine years I've flown my own aircraft on 'RPM' I' had no trouble with sticking valves and rings. That's ho RPM Aviation Oil Compounded has saved me hours costly maintenance work — by keeping engine parts cle and repairs at a minimum."

The polar flight, from Iceland to Goose Bay, Labrador, w a 1,650-mile leg of a 25,000-mile flight through Sou America, Africa, Europe and back to San Francisco. M Gluckmann also set another record — his was the fir solo flight eastward across the South Atlantic, from Recif Brazil to Dakar, French West Africa.

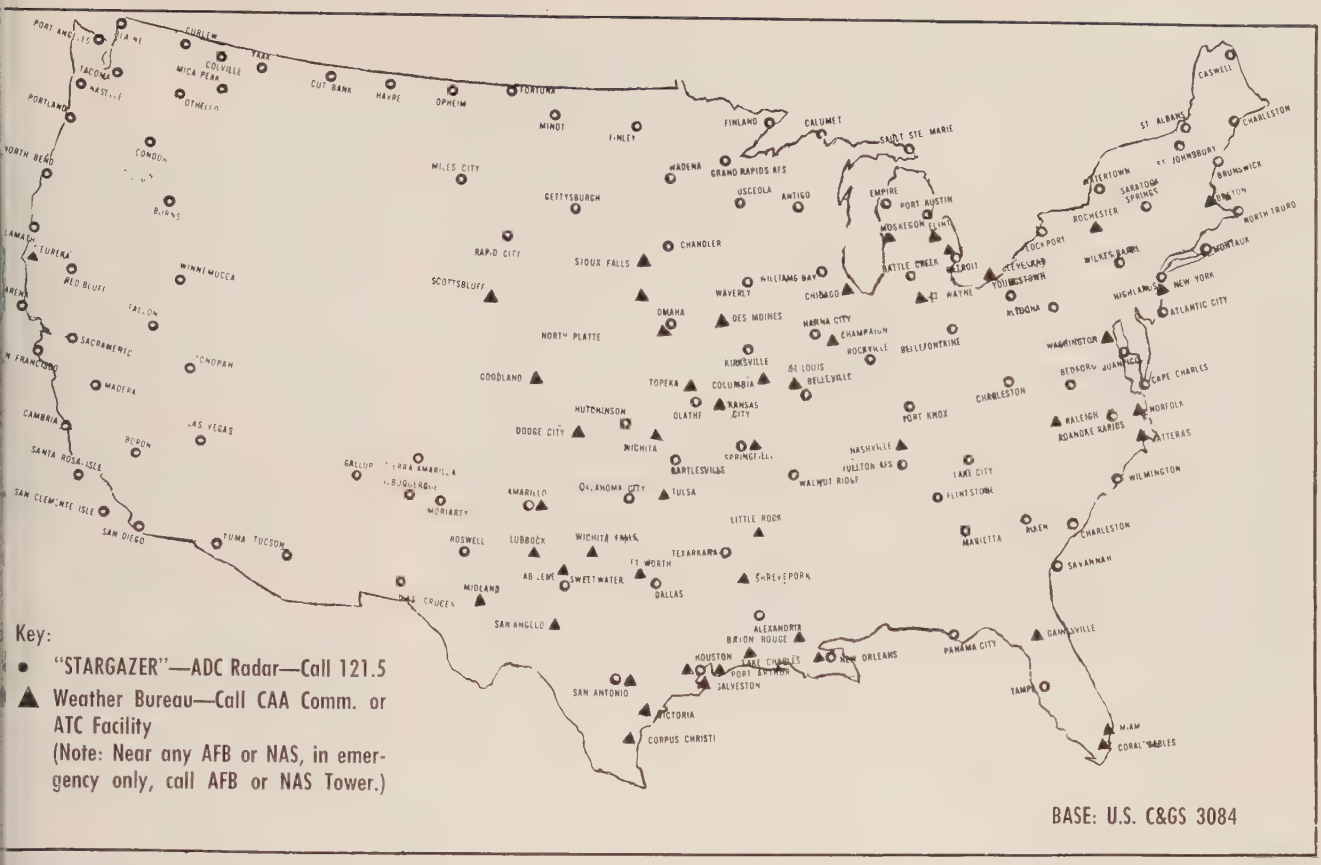
TIP OF THE MONTH

Mr. Gluckmann advises: "Don't tie yourself down to a rigid timetable. Pushing for that last 100 miles may save you an hour, but it may cost you your life."

We take better care of your plan

CHEVRON AVIATION GASOLINE

AVIATION OILS RPM



nderstorm advisory services and weather bureau

HEAVY WEATHER DETOURS

by Joe Bush

This is the season of most thunderm activity. Individual pilots' preferes vary from "sweating it out" on ground to belt-tightening probing empts based on forecasts of "widely ttered TRW—"! Today, the comation of high-altitude, pressurized craft plus airborne and ground radar taken much of the guesswork out these weather systems, if not the ig.

However, the advantages of such option are primarily those of greater ection of desirable altitudes and tes, rapid altitude changes for best C handling and, of over-flying *most* ather. The gimmick in the latter is t quite a bit of weather exists even pressurized levels, also the unhappy ncidence that a thunderstorm inertently encountered at these levels at its ugliest.

So radar, whether airborne or und-based, remains "man's best end" if man must fly when this type weather is around. The virtues of ar as a heavy weather detour guide n vary considerably by type and cumstance of flight.

For obvious reasons, most flight options are going to be conducted in R conditions in the foreseeable fue. And when in VFR conditions, it not always practical to see one's way around and between successive or grouped build-ups if not above the average tops of the general weather. And at lower levels, many a pilot has been booby-trapped in a blind turn into a box-canyon of black cloud attempting a VFR transit.

Usually, you find yourself wistfully thinking of the 180° turn you should have made earlier, while frantically trying to raise ATC for a quickie altitude. The next round in this unhappy situation is second guessing the "light spots" while hunting at least some VFR, waiting for that ATC.

Airborne radar with its storm-cell analysis capability eliminates most of this unrewarding blindman's buff and enables the straight-forward confident VFR or IFR flight planning you have always dreamed of. Whether VFR or IFR, you know that you are going to be able to evaluate the situation in advance and make a decision before it is forced on you.

Further, the panic-edged situation of riding out a big one enroute while ATC struggles to clear the way for an immediate altitude change or route diversion, is largely eliminated by the advance notice, and the suggested available detours afforded by the airborne radar info.

Such an abundance of blessings must have some hidden jokers. One such is the unhappy spot you are in if the little black box goes out on you after committing yourself to an operation you would otherwise have looked twice at. However, the quality and design of airborne radar is such that this is a pretty fair gamble.

A more likely circumstance is foreseeing the need to divert while on the gauges in a crowded area. Usually ATC is already backlogged with similar requests from other guys who beat you to the panic button. This is generally referred to in ATC as a time when something "hits the fan." Unfortunately, the dispersion of traffic is not accomplished as easily.

Although you may, in a real bad one, exercise CAR 60.20 (Emergency action), there is really not too much choice as to whether you risk getting your brains shook-up riding out the delay or "guess-timating" your own separation from intimate neighbors. The desired goal is to avoid ending up in an aluminum shower. And this is best and most easily achieved by pinning down all available thunderstorm information as far in advance as possible.

Whether you have a "magic-eye" or you employ the thunderstorm services of the military (ADC-"STARGAZER"),

(Continued on page 36)

NAVICOM

RTCA Recommendations Imperil Latest Radio Comm Equipments

In the furore surrounding the proposed TSO requirements for VHF navigation equipment used for IFR flight, little attention has been given to the planned use of 50 kc frequency spacing and the increasing use of DCS (Double Channel Simplex) methods of air-ground communications in 1959.

It should be realized more widely that these change recommendations are not the result of some bureaucratic whim within CAA, FCC or any other government agency as often charged. Rather, they are usually the result of long and highly technical research and investigation into the problems of the increased usage and congestion of the channels assigned to the aviation industry. This research is generally conducted by the Radio Technical Commission for Aeronautics.

The RTCA is a cooperative association of all combined U. S. government-industry aeronautical telecommunication agencies. It is not in itself an official agency. Its objective is the resolution of such radio communications navigation and equipment problems mentioned above by research, investigation and mutual agreement of its member agencies. Its recommendations, although not regarded as statements of official government policy, are nevertheless often taken over in whole by, or largely influence the policy of, such agencies having statutory jurisdiction in the subject matters.

Example, the RTCA in a series of very thorough evaluations of VOR airway lateral separation criteria based on the 15° separation already in use, in 1955 recommended that "Minimum Performance Standards" be established for all VOR receivers used in IFR flight. Earlier, in 1954, RTCA had recommended that the requirement of "approved" equipment to meet these standards be expanded to include all airborne equipments. So today we face the implementation of such a policy that may mean expensive initial or replacement purchases of TSO'd equipment in lieu of the much needed tightening of CAR 43.31 or possibly a more practical means of periodically checking the accuracy of airborne VHF nav receivers used in IFR flight. No sane pilot denies the desirability of insuring that his nav equipment is functioning accurately under instrument conditions. Nor does he relish the thought of sharing the same airspace on IFR inadvertently with some indifferent individual operating with faulty equipment. Nevertheless, to ignore the possible development of a system of adequate checks and require that the full use of the public airspace be denied unless all airborne NAV equipment meet all requirements of the airlines and the military is unnecessary.

With regard to DCS communications, we have another example of threatened premature obsolescence, by pressure this time rather than by regulation. DCS is primarily the non-simultaneous use of two discrete frequencies, one in each direction, sometimes called cross-banding. An example is the paired use of 120.7-126.7 mc for enroute air-ground contacts with ATCS stations.

This cross-banding is accomplished in several ways, by automatic pairing within transceiver type equipment designed with this capability and set up accordingly, by individual separate selection of the transmitter and receiver functions of a transceiver with this capability or, by simultaneous, individual selection or tuning of two separate receiver and transmitter equipments.

Much of the latest, high-quality communications equipment now available on the market for the heavier aircraft used by business operators has DCS capability designed into it. Some equipment designed for the medium and light twins also have it. BUT, much of the latest equipment, either already in use or emerging on the market for the rapidly increasing field of light twins and single-engine high-performance business aircraft, must rely on the latter solution which involves tieing up two equipments to do one communications job. This becomes pretty tough when one of the popular nav-com combinations is the second VHF radio in the cockpit, vitally needed for navigation purposes in IFR.

As a side-light, there is definitely NOT widespread agreement as to the advantages of DCS communications. The frequency jamming familiar on Single Channel Simplex (SCS) in ATC handling at least permits the prospective caller to monitor "the party line" for an opening before transmitting, no matter how crowded the channel. The often unintended or discourteous interruption or "break-up" on SCS, may well become commonplace and unavoidable on DCS. You just cannot hear people "listening" and the fur may really fly after a few long-winded airborne clearance readbacks or enroute ATC contacts are repeatedly broken up.

On the subject of 50 kc spacing in the 118.1-126.9 mc band, it is no secret that RTCA has been urging this for some time as a solution for the lack of sufficient channels in the current 100 kc-separated ATC spectrum, for all contemplated ATC purposes. The real or imagined need for increased specialization by geographical or functional division of air-ground communications has already proved embarrassing even to some larger business aircraft operators who have hoped to amortize equipment of recent vintage until a final, all-encompassing level is reached, if ever.

Unlike automobile manufacturers who have been accused, justly or unjustly, of designing for early replacement, aviation radio manufacturers have been noted for protesting the prematu obsolescence of their equipment. N only do they regard seriously the obligation to their customers, but price within reasonable and competitiv ranges require a reliance on productio runs of some length, minor modificatio or improvements excepted.

At this time, when statistically, t air carriers and military form the ove whelming majority of the IFR co munications and ATC workload, may be necessary to design and i plement such systems to meet primari their complicated needs. This shou not preclude planning to reserve suf cent "common-calling" or .1 mc se arated discrete channels for necessary communications and AT purposes for general aviation.

Meanwhile, automatic communicati for which the AMB has just awarded development contract to RCA, may ser to relieve some of the pressure e pected in the fast approaching futu

Portable Receiver Usable For Emergency Navigation

Recent all-electric failures that ha occurred to even airline aircraft ser to re-emphasize the desirability of independently powered nav radi Zenith Corporation's sleek new Navig tor portable closely resembles a strea lined, modern version of an earl combination pre-WW II portable t used to be standard equipment w

every serious cross-country pilot.

A two-band receiver, the Navigat provides long distance reception standard broadcast stations plus l frequency airways stations and homi beacons in the United States, Cana and overseas areas. In addition to t emergency Nav capability, this type portable also helps resolve the famil irritating problem of telephone c gestion on even the "reserved for av tion" type of weather bureau servic

It has been flight tested in aircr ranging from the multi-engine type popular light planes of recent ma facture by commercial as well as p vate pilots. Capable of performing ev navigation function almost as well standard and built-in airborne equ ment, the Navigator has a tuned

age and 3-gang condenser which give perior selectivity and sensitivity, and inimizes broadcast station interfernce on the 150 to 400 KC band. A our-inch Alnico 5 speaker and pushull audio with 275 watts of undistorted utput give good tone quality and volme. An earphone attachment is also vailable at slight extra cost for use in oisy cockpits.

Equipped with two ferrite, plate type, ertically polarized loop antennas, one or each wave band, and a NAV switch eliminate automatic volume control, ne Navigator gives a very sharp "null" or homing or for taking cross-bearings. An azimuth scale mounted on top of ne sturdy top grain cowhide cabinet ives quick reading of relative bearings.

The set operates for approximately 50 hours on one set of six type C rdinary flashlight batteries.

Its cabinet dimensions are 8-5/16" long, 1/16" high, and 3-1/2" deep. Weight is 3/4 pounds, with batteries.

Circle No. 13 on Reader Service Card

ilent Paging For Ramp Or Shop

A new type of electronic personal illing system has been developed by C Spark Plug Division that has great otential for airport service ramps and nops where high noise level defeats oudspeaker or radio paging systems. ermed "Vibacall", the device signals ou by vibrating when you are "called."

The system was developed over the ast 2-1/2 years under the direction of r. C. D. McGillem, head of military nd electronic engineering at AC-Flint, nd William J. McBride, department ead for electronic development, projct engineer for the device is Marvin Fink.

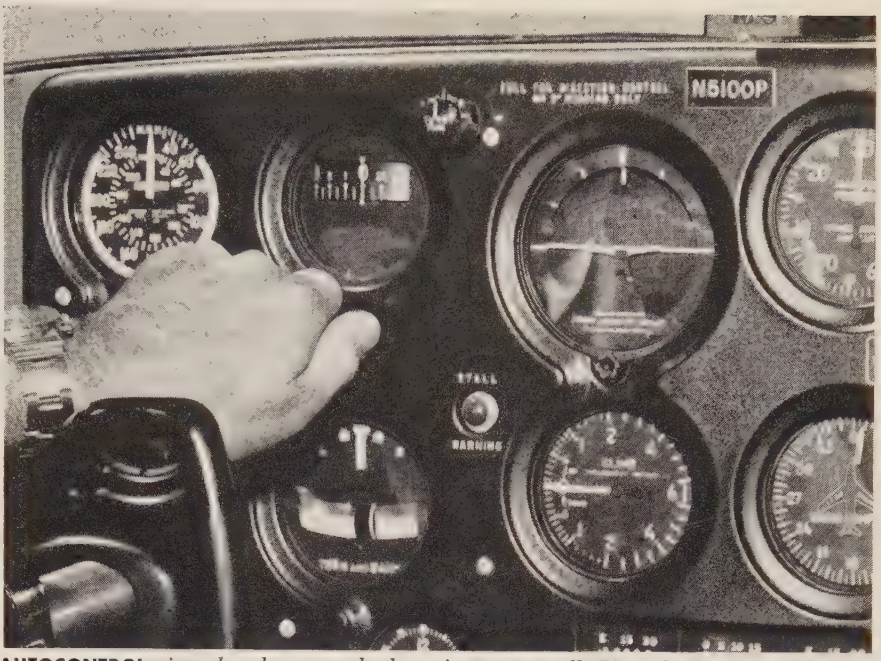
In operation key personnel, such as aintenance supervisors, departmentent executives, etc., slip a small radio eceiver, about the size of a pack of igarettes, into their pockets and go bout their regular travels or duties in ne shops or out on the noisy ramp reas, where a public address system ould not be adequate.

If wanted by the office, a call over ne electronic system, is placed. The evice in the pocket immediately ibrates. This vibration is felt at once, asts for just a few seconds and can be epeated by the operator if necessary. he person paged goes to the nearest elephone and calls the operator. The ntire process of paging and of returnng the call can be done in a few econds.

The paging equipment consists of a aster console with selective coding apability, remote booster amplifiers, nd the personal pocket receivers each f which has a coded setting. The plant s equipped with a "loop antenna"—an asily installed wire. At AC's plant, or example, the plant is wired so that irtually the entire place can be covered ith the system. About 85 receivers are ow in use and up to 200 are expected be in use shortly.

The receiver, usually worn in a reast pocket in shirt or suit coat, eighs about 7 ounces and measures 3-3/4 by 2-1/2 by 1-1/4 inches. A total of 380 separately coded receivers can be operated from each console. The console runs from regular plant "plug-in" electric power. Each receiver actually is a battery-powered, transistorized radio. The devices operate below radio broadcasting frequencies. No license from the Federal Communication Commission is needed.

Circle No. 49 on Reader Service Card



AUTOCONTROL, *introduced as standard equipment on all Piper business airplanes as "AutoFlite" models, will fly the plane on an exact course or make turns automatically. Combination turn trim and heading lock knob is at upper right side of directional gyro. Concentrically mounted trim knob permits fine adjustment for various trim requirements.*

Circle No. 14 on Reader Service Card

Icing Developments For Light Twins Featured At Reading Show

Skyways is especially impressed with the wide array of offerings in the anti-icing and de-icing field for those smaller business aircraft to which this threat has been a major deterrent to date. Such equipment was discussed at the Reading business flying meet in June.

In the past, good flight planning has enabled a high percentage of successful operation with a minimum of icing encounters. The combination of increasing airway congestion and emphasis on IFR-type operation has often placed these unequipped aircraft in untenable positions of icing exposure far beyond anticipated limits. ATC has often booby-trapped a pilot unwittingly and unless relief in the form of altitude change is immediately available, an emergency situation becomes imminent. Although such systems are not designed to enable extended deliberate exposure, their availability plus airborne radar could well bring this class of operation closer to the nearly all-weather capability of the airlines.

Dr. Robert Taylor, formerly associated with Servel Refrigerator, developed for the Piper Apache an anti-icing system based on exhaust-heated Freon gas circulated through an integrated leading edge shaped canister that would provide thermal de-icing without the necessity of pilot operation. Temperature rise of about 50° is calculated to control the normal icing encounter without too adverse effect on subsequent build-ups along the chord of the wing or tail surface. Piper also plans shielding of their fabric fuselage with plastic at points impacted by ice chunks—slung off the props, an experience familiar to many IFR pilots but not conducive to passenger mental comfort in the close quarters of light twins.

Goodrich, long in this field, showed their Type 23 conventional expanding-tube pneumatic system for lighter aircraft. They plan to offer two alternatives, a system powered by the customary engine-driven pumps but of a new, scaled down type suited for this operation and also a pressure-bottle type with 3-hour capability at intermittent usage techniques associated with "moderate or light icing."

The systems uniformly are estimated to add about 50 lbs to aircraft weight installed (the boot type is, of course, partially removable out of season) and cost set at both sides of $3,000.

Pilots who have sweated out whip antennas doing a St. Vitus jig prior to parting company with the aircraft, will be pleased to know that Dr. Taylor is extending his "silent-refrigerator" heating system to warm antenna masts.

In the radio equipment categories, Bendix and RCA exhibits were a natural follow-through after the UAL radar school sessions. Collins and Lear put their latest on display with Lear LIFE computer system and Collins lightweight "airline standard" navcomm packages sharing the spotlight. Engine and accessory exhibits featured glimpses of latest developments and

(Continued on page 42)

Helicopters for Business

Non-Rotating Cable Assembly

Bergen Wire Rope Co., Lodi, N. J., has perfected a new wire cable for use in conjunction with the Breeze Corp.'s Rescue Hoist attached to a Sikorsky S-58 helicopter.

The cable assembly has an unusual construction made of stainless steel

wire cable. The strands of the cable being wound in opposite directions, results in a non-rotating cable, as spin, or circular motion, about the vertical axis of the cable is impossible. This is especially important during repeated use of the cable.

Helicopter Air Lift Expands Service To Texas Metropolis

Sprawling Houston, one of America's great cities in both area and population, is a "natural" for helicopter operations. So it was only logical that the Texas metropolis was selected as the site for Helicopter Air Lift's first enterprise outside of Chicago.

With two new Bell 47H helicopters, the firm kicked off its unique lease service in Houston in May to service business and industry in one of the nation's fastest growing areas.

The firm's new owners plan to duplicate the highly successful HAL operation of Chicago (see March Skyways, page 20). Under direction of fast-moving, hardworking Hal C. Conners, HAL was established in Chicago three years ago as a division of Skymotive, Inc., a fixed-base operation.

With proof of Conners' successful formula evident, extension of the enterprise to other areas seemed inevitable.

Ken C. Withers, a 34-year-old Houston-ite, head of M&K Investment Inc., a firm dealing in consumer finance paper, became interested in HAL. He talked with Skymotive officials, and negotiations by which M&K bought the Helicopter Air Lift division were completed in February.

HAL Inc. of Illinois was established with Conners as general manager. Then HAL Inc. of Texas was set up.

M&K plans to set up similar operations throughout the country, attracting local capital in each case, but with the various operations drawing from the original operation's pool of experience and know-how. The name Helicopter Air Lift Inc. followed by "of" and the name of the state in which the various operations are established will be used.

Here's how the HAL service works. A firm subscribes to the service under a year-long contract. Later, the executive needs only to pick up the phone and call the Air Lift office when he wants a helicopter.

A few minutes later the three-place Bell ship lands at one of various heliport areas. Sometimes the copter will land on the roof of a factory or on the lawn in front of plant or home.

Then the subscriber is whisked to his destination. Sometimes the customer hauls light cargo, or important documents.

To heighten prestige a neat sign bearing the customer's firm name is affixed to the outside of the helicopter whenever he uses it.

Prospects are bright for HAL's success in Houston, where more than 1,000,000 people are spread over one of America's biggest urban areas.

Houston is one of the world's great shipping ports and teems with oil, gas, chemical works, light and heavy manufacturing and industrial units. Surface traffic, of course, is congested.

The complexity of the situation practically begs for a helicopter. Helicopter Air Lift Inc. of Texas plans to fill that need.

Alaskan Firm To Operate Alouette II

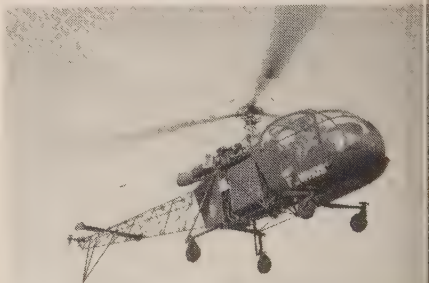
Inlet Airways of Homer has taken delivery of the first jet helicopter to be put in service in Alaska.

The Alouette II, the only jet copter in commercial operation in the Western hemisphere, will be used by Inlet for oil-geology survey work and in connection with Alaskan fisheries and canning firms. Inlet President Paul D. Choquette said that the new copter has already been chartered by oil companies to ferry men and supplies to inaccessible areas.

Choquette expects a year-round operation of the craft. He explained that during nearly six months of the Alaskan year, when daylight is short, the hour-and-a-half to two hours required to warm up reciprocating engines makes only short-haul, fast jobs possible. The Alouette's jet engine operates as well in sub-zero weather as it does at Alaska's plus-100-degrees summer extreme and requires only a minute-and-a-half in minus-60-degree weather from engine start to takeoff.

Inlet has been operating a fixed-wing charter service for seven years. The Alouette marks its expansion into the helicopter field.

Maintenance on the five-place craft average one hour for each hour of flight as compared to the U.S. average on non-jet equipment of eight hours per flight hour. The French, Sud Aviation,



ALOUETTE II *such as used by Inlet Airways is shown here during demonstration.*

designed jet is being assembled and marketed in North and Central America by Republic Aviation Corp. It is powered by a 400-hp Artouste IIB-1 turbojet engine. Capable of more than 110 mph, it has exceptional high-altitude performance and can lift 77% of its own weight for air-crane, freight work.

American-Made Helicopters Serve Vital Capacity in Sweden

U. S. made helicopters are being operated by Osterman Aero AB, Swedish pioneering helicopter operator, the first company outside the United States to operate helicopters commercially.

Osterman's first three copters, Bell 47s, were purchased in 1947. Today, the firm is operating 12 Bell and two Sikorsky S-55 craft.

First copter operator in the world to start regular mail service, Osterman has carried mail since Feb. 10, 1948.

During the first ten years of operation 850 of the 860 planned regular flights were made on the 125-mile route, an equivalent regularity of nearly 99%. Besides being a mail carrier, the company has made more than 1,000 ambulance and rescue flights. Last year 178 such flights were made.

Because of the rugged winters in Sweden, the nation's Air Force has an Osterman helicopter pilot on duty at all AF bases on a 24-hour day basis to respond to search and rescue calls.

From left: W. M. Lentz, who made the radar installation; W. B. Newton, Service Manager; and W. E. Congdon, Manager of Atlanta Operation.

Radar joins INA insurance to protect company-owned plane

Now weather-avoidance radar has been added to Southern Airways' Super 18 shown above, rounding out another important phase of a complete protection program. Complete protection is a basic philosophy of Southern. Their complete insurance coverage is good evidence of this.

Other planes owned and operated by Southern include a Twin Bonanza, 3 Bonanzas and a Travel Air. These, as well as planes the company buys and sells from time to time, are fully covered by insurance tailored by Insurance Company of North America, the nation's leading independent underwriter of aviation insurance.

INA can provide you, too, with aviation insurance to fit your needs. 20,000 agents stand ready to serve you. 102 claims offices promise quick settlement.

These *extra values* can be yours after a note or a call to your nearby INA agent.

INSURANCE BY NORTH AMERICA INA®

INSURANCE COMPANY OF NORTH AMERICA · PHILADELPHIA

Circle No. 15 on Reader Service Card

Osterman copters were used in the reconnaissance for the longest, highest voltage transmission line in the world . . . 380,000 volts and 600 miles. The craft were also used to carry personnel, equipment and provisions to many of the bases along the line.

The State Power Board makes regular power line inspections with the helicopters. A similar use is made of the service by the Telecommunications Board.

Outside of Sweden most of the Osterman operations have been transporting men and material for oil and mine companies and railway construction.

Total number of flight hours recorded since the company's start in 1947 is nearly 30,000. During 1957, flying hours amounted to 6,238 of which 763 were in the Sikorsky and 5,475 in Bell copters.

Helicopter Powerplant Brochure

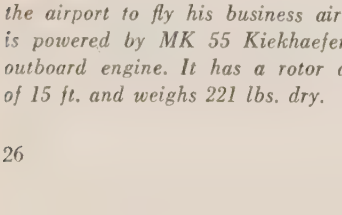
Illustrated technical information brochure has been completed by General Electric for the T58 Turboshaft Engine. This was prepared since GE's small gas turbine, designed to power helicopters, successfully completed its official 150-hour-model test. The bulletin contains a detailed cutaway illustration of the engine.

Canadian Firm Names Board Chairman

Air Vice-Marshal Leigh F. Stevenson, C. B., was named Chairman of the Board of Okanagan Helicopters Ltd. and Subsidiaries in Vancouver, B.C.

Air Vice-Marshal Stevenson was previously a director of Okanagan Helicopters Ltd., United Helicopters Ltd. of Torbay, St. John's Newfoundland and Agar Helicopter Consultants Ltd.

Expansion of the Okanagan Group and increasing necessity for meetings of the Executive Committee of the Board of Directors in Vancouver made it necessary to have a Vancouver resident as Vice-Chairman of the Board. J. J. West was elected to this position.



DH-5 AEROCYCLE, *though still in an experimental stage, may be the answer for the businessman who leaves from home for the airport to fly his business aircraft. It is powered by MK 55 Kiekhaefer 40 hp outboard engine. It has a rotor diameter of 15 ft. and weighs 221 lbs. dry.*

THE WORKING 'COPTER

SCHEDULED SERVICE *by Chesapeake & Potomac Airways shows Bell 47-J above Baltimore*

Helicopter Service Aids Busy Executives In Baltimore-Wash. Area

Businessmen in the Washington, D. C., and Baltimore, Md., areas can speed up negotiations with the aid of the recently established scheduled helicopter service by Chesapeake & Potomac Airways, Inc.

Filling a need for the rushed executive, the new service, based at Baltimore's Friendship International Airport, provides two daily flights between the downtown Baltimore Heliport and Washington National Airport. En route stopovers are made at Friendship.

Bell 47-J Rangers, with cruising speed of 80 mph and capacity of three passengers plus pilot, leave Baltimore at 8:18 a.m. and 3:42 p.m. Return flights from Washington are at 10 a.m. and 5:40 p.m. A connecting service from Washington National to Andrews AFB provides morning and afternoon service, also.

Chesapeake & Potomac Airways maintains its own service shop, the only approved helicopter repair station in the Baltimore-Washington area. Prior to establishing the regular scheduled service, the company has been offering helicopter service on a charter basis within the area to industry and individuals. Inauguration of the new service is proof that the working helicopter is the businessman's friend.

Copter Pushes Barge In Unique Job

A grounded river barge was moved to deep water by New York Trap Rock Corp.'s helicopter in a unique operation on the Hudson River near Haverstraw, N.Y.

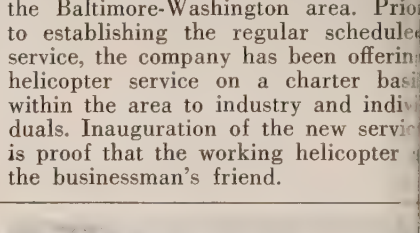
The barge, which slipped its moorings, drifted aground where a tug was helpless to extricate it. George Smith, marine superintendent for New York Trap Rock, was hailed by the helpless tug captain, and helicopter pilot Bill Barolet was sent into action.

Barolet landed his 47-G Bell copter on the deck of the empty barge, tucked one of his floats against the starboard side of the barge and "gunned" his motor. The barge eased out into deeper water where it was towed to a mooring.

Besides this unusual emergency rescue by the copter, the craft has other out-of-the-ordinary uses, too.

Barolet logs some 500 flying hours a year. Much of this time is spent filling flight requests from schools, private institutions and municipal and civic groups.

Assisting Santa Claus takes up most of his time toward the end of the year, he explains. He delivered Santa to a group of physically handicapped youngsters last year . . . his "biggest thrill."



HELPFUL SHOVE *is given grounded barge on Hudson River by company's helicopter*

He was cited by the Rockland County Squadron, Civil Air Patrol, for his participation and "keen interest" in relighting the High Tor beacon.

Agreeing to ferry passengers and supplies in the copter in the event of an emergency drew the commendation of William J. Brophy, Rockland County Civil Defense Director. A similar citation was issued by Rockland County's Sheriff J. Henry Mock for Barolet's agreement to participate in local emergencies and disaster.

Barolet sums up his company's attitude about the generous use of its helicopter with, "working with our neighbors is part of the Trap Rock policy."

SERVICE BEYOND PRICE

Reliable engine overhaul and repair

Since 1928 Spartan service has contained a priceless ingredient—quality! The high standards set by Spartan's skilled specialists has meant

- *greater safety*
- *better performance*
- *lower operating costs*
- *right price for quality work*

Spartan's shop facilities can put your aircraft in first class condition and keep it that way—write, wire or call Spartan today!

SPARTAN AIRCRAFT COMPANY

AVIATION SERVICE DIVISION • MUNICIPAL AIRPORT • TULSA, OKLAHOMA

Circle No. 18 on Reader Service Card

CANADIAN REPORTS

North of the Border
By R. J. Childerhose

RADIO STATION CKEY'S *Mooney Mark 20 executive aircraft is used in secondary role of aerial observation, reporting on the air the weekend traffic conditions at Toronto.*

The Rolling Home Show

A novel use for its executive Mooney Mark 20 has been found by Toronto radio station CKEY. During the holiday months of the year, they utilize the sleek craft for aerial observation of weekend traffic on main arteries leading to and from the city. Traffic reports are broadcast directly from the Mooney by means of a ¼ watt battery-operated portophone radio.

Flown by pilot-radio engineer Bob Griffiths, the Mooney flies in a 50 mile radius of Toronto checking the flow of traffic returning to the city on Sunday evenings. The flight is made in conjunction with CKEY's "Rolling Home Show" which is beamed primarily at the homeward motoring public. In addition to the observation flight, the radio station keeps a fleet of radio-equipped station wagons on the roads doing spot checks. It is estimated that the program has a potential audience of more than 471,000 people.

The show begins at 7 pm Sunday evening and runs through until midnight. At about quarter to 7, Bob Griffiths and radio announcer Keith Sandy climb into the company's executive aircraft at Toronto's Malton Airport. By show-time they are usually starting their circuit of the major highways leading into town. Traffic volume, car accidents or jam-ups are all reported to the radio station's main studios. Often these are put directly on the air.

Although aerial observation is one role played by the CKEY aircraft, its more basic role is in the transporting of company executives around eastern Canada on business. The route between Toronto and Ottawa is especially well-travelled by the well-groomed CKEY Mooney in liaison trips between the Toronto broadcasting company and its affiliate CKOY in Ottawa.

As to its suitability for the executive role, pilot Bob Griffiths has an opinion shared by many. "With its cruise speed of 165 mph, at a fuel consumption rate of 7 gallons per hour, we find the Mooney Mark 20 just about ideal for our particular operation. I think its biggest advantage as an executive type aircraft is its high cruising speed and 900 mile range."

Okanagan Helicopter Operations

Increasing activity in exploration work this summer by major oil companies in the Canadian northwest has resulted in a major fleet re-distribution by Okanagan Helicopters Ltd.

A total of 15 Bell helicopters and one Sikorsky S-55 will be at work in the Northwest Territories, northern Alberta, British Columbia and the Yukon according to a company spokesman.

Shell Oil Company of Canada has contracted for six Bells which will be engaged in transporting exploration and survey crews during the summer months. California Standard will use a Sikorsky S-55 to transport oil and fuel to supply camps, from which four Bells will operate on exploration work.

Imperial Oil has a contract for three Bells, while Sinclair and Triad will each use one Bell.

The Okanagan Helicopter Group, which includes as subsidiaries, United Helicopters Ltd., Torbay Airport, Nfld.; Canadian Helicopters Ltd., Toronto; Smart Aviation Ltd., of Toronto; and Agar Helicopter Consultants Ltd., Vancouver; is the world's largest helicopter operation.

During 1957, contract operations by Okanagan covered more than 22,000 flying hours. Gross revenues in that year came to $2,882,000 while net profits for 1957 totalled $312,586. At the present time, Okanagan is operating one Sikorsky S-58, 21 Sikorsky S-55's, and 30 Bell 47's.

Founded in 1947 by Carl Agar, Okanagan Helicopters pioneered the use of this type of transportation by industry. Agar is acknowledged to have laid the groundwork for mountain flying techniques for which he was awarded the Captain William J. Kossler plaque in the international field and Canada's McKee Trophy.

Peterborough Airport Open

Executive pilots interested in reaching Peterborough, Ontario, will be interested in knowing that the city's new airport, located 3 miles southwest of Peterborough, is now open. The airport's east-west runway has 1,900 feet of hard-packed sandy soil, and clear approaches.

Runway markers are in place, gas tanks are being installed, and the wind sock is located in mid-field. There is no landing fee.

Quebec Helicopter Firm

Autair Helicopter Service Ltd., of Montreal, recently took delivery of three new Bell 47 helicopters at the Fort Worth, Texas, plant. Autair, Quebec's only general charter air service devoted exclusively to helicopter operations, will begin filling two Canadian government contracts. The company operates a fleet of four Bell 47's.

Autair started this year flying power line patrol for Quebec's Hydro-Electric Power Commission. Another job includes surveying northern Quebec for the water resources division of the Canadian government. Said Autair vice-president H. K. Iverson:

"Bell helicopters have been proved in Canada, and we plan to operate them as far north as the Arctic Circle."

Other Autair officers are: Leslie Hodges, board chairman; and D. W. Connor, president. Connor was formerly a wing commander in the RCAF.

Chief Pilot is Jack Colborn, and operations manager is P. L. Hort, former helicopter pilot with the British Royal Navy. Sales manager for the young company is Philip H. Holland.

Executive Viscount

A second turbo-prop Viscount airliner has been purchased by the Department of Transport for official use by the Canadian government. This V-700 series Viscount is similar to the one delivered to Canada in 1955 for government official's visits abroad and for internal communications.

The aircraft has been utilized in other than executive-transport roles being used by the DoT for the testing of radio-navigation facilities across the Dominion. The Prime Minister of Canada often uses the aircraft for official business.

Air Traffic Increases

Air traffic for the month of May, in terms of the number of landings and takeoffs, increased by 11.9% over the same period last year, according to a report by the Department of Transport. The report covers the 27 airports across Canada at which Transport De-

(Continued on page 40)

S. Patent No. 2,687,102

Night view of L. B. Smith's new 80,000 square foot hangar at International Airport, Miami Florida. The clear span area is 360 feet long by 80 feet deep. Vertical clearance of 22 feet

Every square foot of hangar space— a square foot of usable space

Cantilever type construction means no obstructions of any nature to interrupt the clear span space, providing perfect housing for the maintenance and storage of aircraft. Enclosed space to the rear is spacious area for workshops, parts and office facilities.

This advance design is the result of 17 years experience in building several hundred hangars, of all sizes and types, which have withstood the most exacting load forces of every area—from the heaviest snow loads of the north and east, to the hurricane wind forces of the coast and the earthquake shock loads of the west.

Consult us before you build a hangar of any size, as this new modern cantilever type building can be constructed to your exact needs and in most cases will cost no more than older fixed span or limited clearance designs.

Call, write or wire us for information

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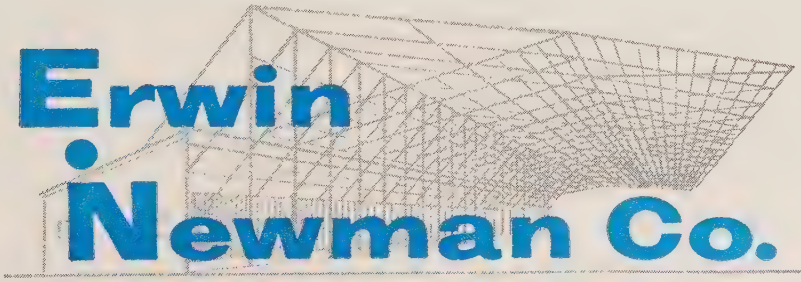


Erwin Newman Co.

Designers and Constructors

- Any Height
- Any Length
- Any Depth

Circle No. 16 on Reader Service

THE NEW

AERO Commander 500

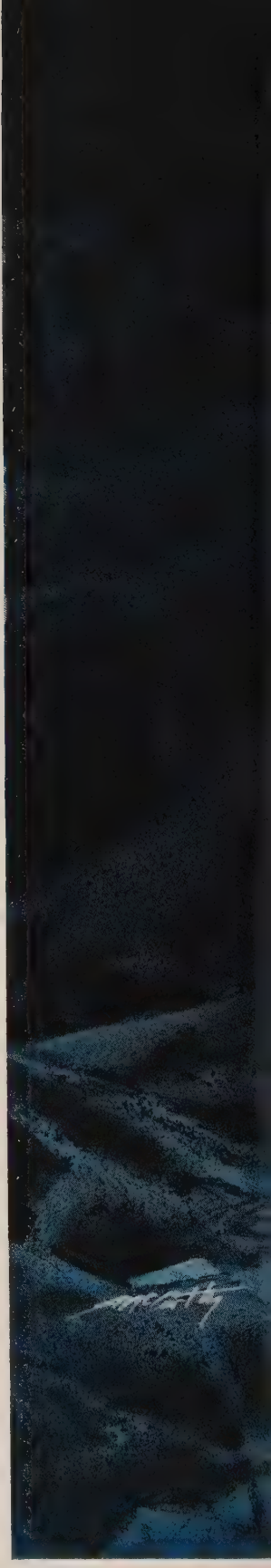
Combines multi-seat capacity and long range ...at much lower cost!

NOW, THE NEW 500 provides famous Aero Commander high-wing performance and stability in a full-sized, utility airplane at a NEW, LOW COST! Here is multi-seat capacity—2,150 lbs of useful load—in a 6,000 lb aircraft which cruises over 200 mph, flies more than 1,100 miles without refueling, takes off and lands, clearing 50-foot obstacles, in 1,400 feet!

The 500 will fly at 24,000 feet—climb 1,400 fpm! On only one of its 250 hp Lycoming engines, it will climb at 310 fpm—fly safely at 8,000 feet! Complete dependability!

And the Aero Commander 500 delivers more useful load at less cost per pound than either of its two nearest competitors!

Your card or letter will bring you, by return mail, an illustrated brochure which describes in detail the versatile Aero Commander 500, its specifications and performance data. WRITE TODAY FOR YOUR COPY!



AERO DESIGN & ENGINEERING CO • BOX 118 • BETHANY, OKLAHOM

NOW, THERE ARE FIVE GREAT AERO COMMANDERS—the new 500, the new 680E which also introduces a new high standard of useful load capacity in its weight class, the superbly performing 680 Super, the long-stepping 560E, and the magnificent Alti-Cruiser, world's first PRESSURIZED light twin aircraft.

LOOK TO THE LEADER
AERO Commander

Circle No. 17 on Reader Service Card

PREPARING DC-3 FOR BUSINESS FLIGHT *pilots, from left, M. C. "Bud" Willett and B. N. "Hank" Haddock, chat with Leo Harrison, administrative assistant to director of marketing, and Karl K. Vollmer, right, vice-president and director of marketing.*

Use of AIRCRAFT for expanding brewery BUSINESS

Company growth is usually measured in terms of climbing sales and expanding production, and Falstaff Brewing Corporation has scored exceptionally well in both. But in the case of this firm there is another yardstick as well, progress in aircraft for business over the past quarter-century.

Falstaff's faith in the future of aviation was demonstrated prior to the repeal of prohibition, when the company rented a small biplane to advertise its ginger ale. And when beer came back on the memorable midnight of April 7, 1933, the brewing firm sent first cases of its product, by air, to the governors of Missouri and Illinois.

The industry pioneer in multiple-plant operation, Falstaff, an NBAA member, purchased its first company-owned plane, a twin-engined Beechcraft, in February, 1948, to better serve its growing sales and production areas. Less than two years later, the Beech was replaced by a larger, more powerful Lockheed Lodestar. During its three years of service for the company, the Lodestar was flown some 2,000 hours, or about 400,000 miles.

The continuing growth of the company and expansion to the Pacific Coast made desirable a larger plane for the longer and more frequent trips, particularly the 2,000-mile run between headquarters at St. Louis and the firm's plant at San Jose, California. Consequently, in April, 1953, a Douglas DC-3 was acquired, and is currently still in use.

Outfitted by Remmert-Werner, Inc., in St. Louis, the DC-3 is beautifully appointed with tables, lounge chairs and a galley. Safety factors include extensive radio equipment, instrument landing system, fire detection system, automatic direction finders and dual instruments. The plane is also equipped with an oxygen system, automatic pilot with automatic approach coupler, full deicing equipment, and recently-installed JATO (jet assist take-off) units, an Aerojet-General Corp. product.

Pilots B. N. "Hank" Haddock and M. C. "Bud" Willett are both veteran of naval aviation. Haddock, who has been with Falstaff since the purchase of the Beechcraft in 1948, served as an instructor in multi-engine aircraft at Pensacola during World War II, and later flew in the Pacific. He presently has more than 9,000 hours of flight time logged. Willett, also a veteran of the Pacific campaign and Korean conflict, had a background of industrial flying before joining Falstaff in 1956. His air time totals more than 6,000 hours.

Although plush by most standards, Falstaff's DC-3 is every bit as much a "workhorse" as its earlier commercial counterparts. In addition to executive flights, the plane has seen service in such varied tasks as hauling shipments of the company's famed yeast culture to new plants and for humanitarian duty as a flying ambulance.

This McMillan radome assembly was specified by both Capital Airlines *and* Vickers-Armstrongs!

In selecting a radome assembly for the famous "VISCOUNT" both Vickers and Capital sought a manufacturer with *two major qualifications* – long experience in radome design, development and production, and superior electrical testing facilities, for guaranteed performance.

They *both* specified McMillan.

In the assembly illustrated above, McMillan supplied a complete "kit" including the radome, microwave absorber material (type "T") and backing, plus the necessary hardware to affix them. McMillan made two radome designs – Honeycomb Sandwich for X-band and Solid Laminate for C-band. The unique hinge design of the mounting hardware affords easy maintenance and repair of the radar equipment.

Aircraft manufacturer – commercial airline – private aircraft owner – each can take advantage of these same "major qualifications" offered by McMillan.

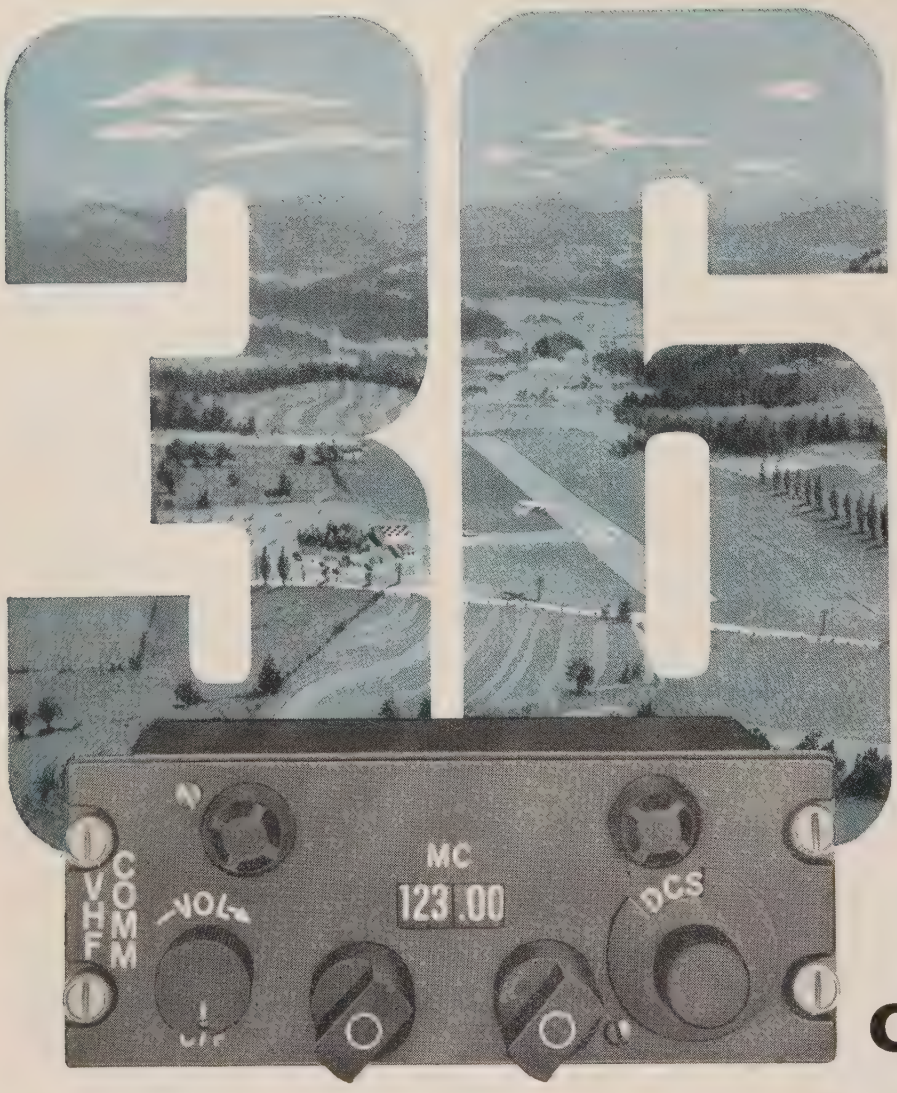
McMillan can satisfy *your* radome requirements – complete information on request.

McMillan

McMILLAN INDUSTRIAL CORPORATION
BROWNVILLE AVENUE • IPSWICH, MASSACHUSETTS

Circle No. 19 on Reader Service Card

COMMUNICATE ON



360 CHANNELS

WITH ARC's TYPE 210 TRANSCEIVER

The rapidly increasing volume of air traffic and the need for more precise traffic control has necessitated a tremendous increase in the number of assigned radio frequencies to carry on the necessary air-ground communications.

Only a few years ago pilots could operate with 10 or 20 channels. Later frequencies were increased to 80 or 90. Plans now call for 360 frequencies—enough to meet the need for years to come. In view of this channel increase, ARC now offers an all-channel, flight proven transmitter-receiver (Type 210 Transceiver) covering all 360 channels. The powerful 15 watts guarantees optimum distance range and the knifelike selectivity assures freedom from adjacent channel interference. Provision has been made for the selective use of single or double channel simplex whereby transmissions are made on a frequency 6 megacycles higher than the receiver frequency. There is no wait between receiving and transmitting for re-channeling.

This is ARC's latest contribution to air safety. Ask your dealer for a quotation to include a single or dual installation, along with other units of ARC equipment listed below.

Dependable Airborne Electronic Equipment Since 1928

Aircraft Radio Corporation BOONTON, N. J.

OMNI/LOC RECEIVERS • MINIATURIZED AUTOMATIC DIRECTION FINDERS • COURSE DIRECTORS • LF RECEIVERS AND LOOP DIRECTION FINDERS
UHF AND VHF RECEIVERS AND TRANSMITTERS (5 TO 360 CHANNELS) • INTERPHONE AMPLIFIERS • HIGH POWERED CABIN AUDIO AMPLIFIERS
10-CHANNEL ISOLATION AMPLIFIERS • OMNIRANGE SIGNAL GENERATORS AND STANDARD COURSE CHECKERS • 900-2100 MC SIGNAL GENERATORS

Circle No. 20 on Reader Service Card

MULTI-ENGINE *students are instructed by Bob Bowman.*

Business Pilots Train at Embry-Riddle

by Alice S. Fuchs

Down in Florida, where a tall white Aviation Building stands out as an eronautical landmark in the Miami kyline, Embry-Riddle is turning out ilots especially trained to meet the eeds of business aviation—men who, ı addition to having commercial li-enses with instrument and multi ıtings, are college trained in such ıbjects as economics, accounting, per-ɔnnel management, salesmanship, ırcraft engines, electronics and ıaintenance. The Business-Pilot Course t Embry-Riddle Aeronautical Institute a realistic approach to the problem f corporations seeking pilots with train-ıg and ability to handle business mat-ɛrs in addition to their flying duties.

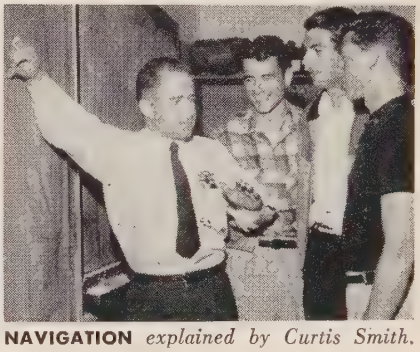
Now in its fifth year, the Business-ilot Course was started by Embry-iddle in the fall of 1953 to supply the ıdustry with pilots having more than ıe usual commercial pilot background. : was recognized that the growth of usiness flying had created the need ɔr a man who, in addition to having ɔp-notch aeronautical training, had a road background of college business dministration training and could be seful to a company in other matters in ddition to his piloting duties.

So successful has the course been that pproximately half the students get ɔbs before graduation. Oil companies, ɔnstruction firms, chemical, automo-ile, tool and die, merchandising and ıanufacturing concerns in this country nd foreign countries are among those ho now employ Embry-Riddle Busi-ess-Pilot graduates.

A two-year course which admits high school graduates possessing a CAA Class I Medical Certificate, the curriculum is handled jointly by the University of Miami and Embry-Riddle. No previous aeronautical training is required and students are advanced through an intensive flight training course covering requirements for a commercial certificate with instrument and multi-engine ratings. The flight training is carefully tailored to produce pilots able to cope with the varied demands of positions in business aviation, and students receive considerably more instrument and cross-country time than is required for certificate and ratings. Multi-engine instruction is given in the twin Cessna and instrument time in the 172 and Stinson.

During the first semester of the course students receive extensive training in the problems of aircraft mechanics—engine structures, both reciprocating and jet, power calculations, engine performance, fuel systems, carburetion, electrical systems, maintenance, inspection and troubleshooting, among other subjects. This part of the course, designated Aerotechnology and taught by Embry-Riddle, gives the student a mechanical background which is invaluable in his flight work and prepares him for any later flight operation he might conduct.

At the same time that he is taking flight training and aerotechnology at Embry-Riddle, the business-pilot trainee is enrolled as a student in the University of Miami School of Business Administration. He receives University credit for courses in Management and Aviation Administration, and he can be graduated with the B.B.A. degree.



NAVIGATION *explained by Curtis Smith.*

Embry-Riddle School of Aviation was founded in 1926 at Lunken Airport in Cincinnati. Thirteen years later the school moved to Miami where the excellent flying weather (reportedly VFR 97% of the time) offers a distinct advantage in the flight courses. Over 50,000 students have received training at Embry-Riddle since its founding. During World War II Embry-Riddle operated four large Army flight Schools, and conducted mechanic training in Miami.

The present enrollment of approximately 1,000 students is distributed among nine different courses including the Business-Pilot Course, and plans are under way for the addition of a jet engine course and an electronics course. The school receives more than 20,000 inquiries a year from all over the world. It is little wonder then that students come from 46 of the 48 states, Hawaii, Panama, Alaska, Puerto Rico and 21 foreign countries.

Who will be Miss Business Aviation in 1958?

Finalists for the Title

LOUISE PELTON, *green eyes and 23, is sponsored by Dairypak, Inc. Home is Clinton, Ia. Moved to firm's NY office.*

REGINA MURACH, *"Reggie," is sponsored by The Fuller Brush Co., New Britain, Conn. Outdoor type, loves to swim, bowl.*

BEATRICE WALKER, *Oke City born, is spo sored by Aero Design & Engineering C Main interests aviation, tennis, swimmin*

JetStar

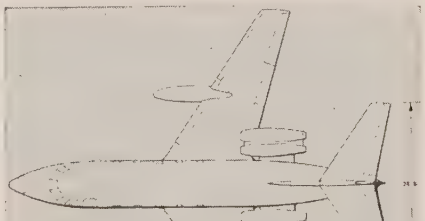
(Continued from page 15)

with a 45-minute reserve at 10,000. If you add the two external slipper or "glove" tanks, each containing 300 gallons, range is increased to over 2,200 miles at 45,000 with the same reserve. Two larger "glove" tanks, each holding 640 gallons, will give the JetStar an extended range of more than 3,000 miles. Lockheed will offer a four-engine version of the JetStar as soon as GE J-85, Fairchild J-83 and P&W JT-12 engines are available.

Although these are not insurmountable techniques, pilots will have to accustom themselves to electric trim and to the absence of conventional trim tab wheels. They'll have to be particularly careful at higher altitudes to avoid exceeding critical mach numbers, which is not difficult to accomplish in this "hot" aircraft. Another thing to watch will be the absence of conventional propeller drag characteristics associated with power reductions. It is easy to come in with excess air speed or altitude in any jet and it is most disheartening to watch that runway slip by before she pays off. It has been my experience that the higher performance characteristics of turbo jet type aircraft are going to necessitate greater precision in all phases of jet flying as compared with the conventional prop-driven aircraft of the past. This means that pilots must have and must devote more time to training in flying jet aircraft and in instrument operations, so they will be proficient in this trans-sonic and supersonic form of flight.

The JetStar adds up to an excellent aircraft. Naturally, certain modifications will have to be made to satisfy the various specifications of the military and corporate missions for which it will be employed. Although the CAA and SAE visibility requirements have been met in the cockpit, perhaps still greater cockpit visibility would be desirable. Another improvement that occurred to me was the possibility of even further internal noise reduction. I was told that production models of the JetStar will have essentially the same noise level characteristics as the Caravelle.

In addition to providing the answer to the multi-mission requirements of the Air Force, the JetStar has already created wide interest among corporation executives. With jet transport aircraft now coming into general use by the airlines, many of the transports are rapidly approaching obsolescence. The busy executive will be in no mood to ride aircraft that have about a third of the speed of our new jet transports. Lockheed showed me its answer to this need. That answer is the JetStar.



PROPOSED FOUR-ENGINE *configuration of JetStar is shown here. Plane offers easy conversion from two to four engine version.*

Heavy Weather Detours

(Continued from page 21)

civil (Weather Bureau and CAA) radar, and/or private (TWA, municipal) weather aids, get the dope and make your wishes known fast.

When requesting the thunderstorm deviation from ATC, include in your request:

1. Point at which you wish to leave approved route.
2. Direction and distance of detou
3. Altitude change, if desired.
4. Where and when you estimate yo could return to course.
5. Your current position and fligh conditions.
6. If you have airborne radar.

If ATC can oblige, they will, or the will advise probable delay and/or su gest an alternate action.

If completely "unable," they wi not equivocate but so state and ask yo "intentions!" You are then operati C.A.R. 60.20.

A good tip might be to ask for t "essential traffic" and, subject yo knowledge of the neighborhood (te rain, uncontrolled airspace, etc.), ap your best judgment. In any case, ke ATC advised because there are ma emergency actions that they cannot i itiate but can assist with after pi prerogative is taken.

Suite 344

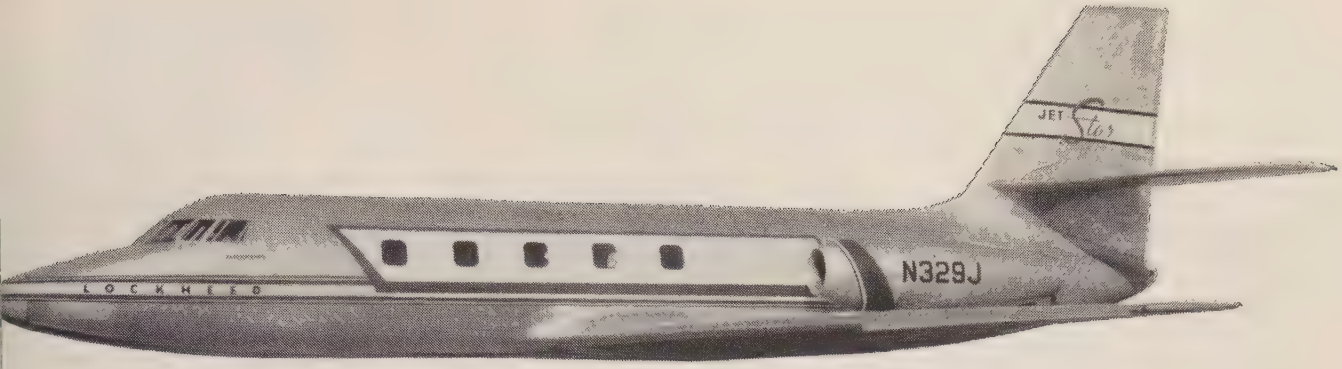
(Continued from page 12)

Heard from George Pomeroy, Swift Aircraft Corp. (from Miami). Geo retired the first of June and is now joying the "Life of Riley." Lots good fishin', George.

Mrs. J. W. Massey, Pres. of Wome Aeronautical Association of Kans (WAA), advises that her Trophy Co mittee is anxiously awaiting to inscri the name of the recipient of this yea WAA trophy, which is to be awarded NBAA's 11th Annual Meeting. No trophy was awarded to John P. Ga Beech Aircraft; No. 2—Jesse Sto cipher, Univ. of Illinois; No. 3—C.E. Brown, Dir. of Aviation, State of Ok *Who will be the winner for No. 4?*

Please keep National Headquart notified at all times of changes of dress, changes in personnel, changes aircraft. Come in to see us.

C. M.



NOW FLYING! THE NEW MULTI MISSION

LOCKHEED JETSTAR

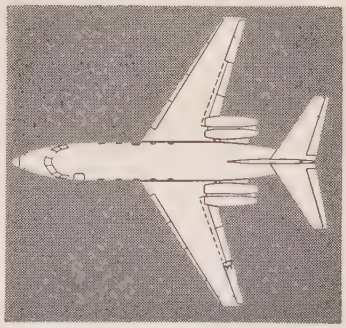
—an "economy size" jet of sweptwing design, that can match the performance of large jet transports...but at a fraction of their costs.

he JETSTAR was built with ckheed funds to fill specific mil- ry needs. In tests it has flown ter than 500 knots, and cruised altitudes of 45,000 feet. The st prototype is now undergoing r Force evaluation testing at wards Air Force Base.

10-passenger plane in its stand- l configuration, the JETSTAR has ilt-in flexibility of interior de- n which gives it the capability performing many important Jet e military missions:

1. *Navigator-Bombardier trainer*
2. *Electronics countermeasures trainer*
3. *Airways and air communications systems inspection*
4. *High-priority cargo carrier*
5. *High-priority personnel transport*

The only aircraft of its kind flying today, the JETSTAR has the rugged stamina and easy maintainability designed into all Lockheed planes. These qualities assure long life and maximum utilization—more important today than ever before in our history.



LOCKHEED *means leadership*

GEORGIA DIVISION • *Lockheed Aircraft Corporation, Marietta, Georgia*

Circle No. 22 on Reader Service Card

SEA AND SKY PORTEL

Where business fliers can relax for a day during a layover or fly in for a vacation at the seashore.

The Sea and Sky Portel, at Montauk on the eastern end of New York's Long Island, was unveiled officially at a weekend open house at the resort site. Conveniently located virtually beneath Victor-16, it offers an attractive RON point to avoid the NY terminal area.

The single landing strip, 3800 feet, has an oiled surface. Fuel available is Mobile. Long Island Airways, which transported many of the guests from LaGuardia Airport on the 100-mile flight, handles the field operation which includes a unicom facility.

Nine units of a proposed 50-unit Portel were viewed by the public and initiated by overnight guests. Decorated smartly, appropriately to the sea surroundings, the Portel received enthusiastic appreciation from the many visitors.

There are "fringe benefits" that go along with being an overnight guest of the Sea and Sky Portel. These include access to the Montauk Downs Golf Club and the Surf and Cabana Club, the latter on the Atlantic Ocean shore. A pier with docks at the Portel for 30 pleasure watercraft will also accommodate the flier-turned-fisherman. (A tackle shop and charter boat service are available.)

Just opened in June, the Portel will be headquarters for the National Flying Physicians "Summer Spectacular" from the 22nd to 24th of this month.

It started at a New Year's Eve party when a group of Navy Reserve pilots were talking about the ideal recreation spot of any airman . . . a place where one can fly in, RON, eat, swim, fish, play golf, horseback ride, etc. The group kicked the idea around then decided to do something about it besides talk.

The talk became a plan which included locating an appropriate site. Since the spark plug group of fliers lived in the New York City area (reservists at Floyd Bennet Field) it was natural that their search was in the same general area. Inspirational factor, as Robert P. Schwartz, one of the group, describes him, is Perry Duryea Jr. who lives at Montauk. Maybe it was coincidence, but the decision for the airstrip was made in favor of a sand dune area on Lake Montauk which has a narrow opening into Peconic Bay on the north. Here was the perfect site . . . waterfront for the Portel, the name decided upon by the group for their motel, to induce fishing interests as well as other aquatic sports, and behind the Portel, a landing strip.

Executive fliers on long trips involving non-working days can take advantage of a relaxing day-on-the-ground in an atmosphere specially designed for doing just that. There is a lounge for visiting pilots; a shower for those who are in just for a swim, and a clothes washer with dryer to solve the laundry problem of the flier who has been on the go for a few days.

Once this team got rolling, things happened fast. The organizational structure was divided with one part in charge of the airport facility and the other part handling the Sea and Sky Portel interests. Officers of the Montauk Air Strip are Perry B. Duryea Jr., president (Lt. Cmdr. USNR); Edward Pospisil, vice-pres.; Henry A. McCarthy, secretary; William Weed, treasurer (Lt. Cmdr. USNR). Sea and Sky Portel Inc. officers are Robert P. Schwartz, president (Lt. jg USNR); Edward Pospisil, vice-pres. in charge of operations (architect of the Portel); Arthur Ward, vice-pres. in charge of publicity and promotion (Lt. Cmdr. USNR); Weed, vice-pres.; Jack Place, vice-pres. (Lt. Cmdr. USNR); and Duryea, treasurer.

In a "crash"-type program involving the ingenuity of each member of the "team," the two entities took shape with startling rapidity.

If the first six months are indicative of the manner in which this team of airmen is to continue operating, their sand dune paradise has, without doubt, a future full of promise.

By Russ Brinkley, Pres.

This will be the third year in which The OX5 Club honors one of it's more than 5,000 members, by naming him MR. OX5 of the year. As in the previous years, it will be the duty of Ralph McClarren and his committee to select from a long list of nominations one man whose accomplishments in the field of aviation, pronounce him as worthy of receiving the distinction.

Each year, the list of nominees grows in length as more club members distinguish themselves in their professions. While any member of the organization is a potential candidate for the honor the trend in the past has been to support those still active in aeronautical pursuits. Previous winners, Arthur Godfrey and General E. P. Curtis, during the years in which they were honored, were in the aviation spotlight and that has not changed.

Nominations for the 1958 award are now open and the committee already has many names from which to make a selection. At least one woman, Blanche Noyes, national airmarking specialist and First Vice President of the Club, is to be considered in the final competition. Her sponsor cited her service to air navigation. Among the distinguished members of the fraternity who have been mentioned for the award are Igor Sikorsky, for his advances in the helicopter industry; Chief Boatswain Patrick Byrne, retired from Navy Aviation, after 42 years of distinguished service; Tony Levier, a veteran Lockheed test pilot who made his mark in the supersonic field; an Early Bird Ernest Hall of Warren, Ohio, who dates back to the days of the Wright Brothers and who has been flying almost daily for a period of 49 years.

MR. OX5 of 1958, will face a lot of stiff competition, before his name is inscribed on the coveted plaque. Tribute will be paid the winner during the Third Annual Awards Dinner to be staged in conjunction with the National Convention, at the Hotel Statler, Los Angeles, August 7 to 9.

Other highlights of the annual reunion include election of new national Governors and Officers and selection of the 1959 convention site.

As the OX5 prepares to begin its fourth year as a purely social organization, member interest and enthusiasm is at it's highest peak, practically every state has it's own organization and the delinquent list is almost negligible.

THIS IS ONLY THE BEGINNING:

John Jack's Wagon Hitched to Star

"NOW WE'LL SELL A NEW TURBO-PROP EXEC AIRPLANE!"

John Jack, for 11 years a SAC employee, contemplates the dynamic stature of Southwest Airmotive Co.

"More Big News: We'll distribute — direct through Southwest Airmotive — a great new turbo-prop executive transport.

"— And something else Big — we bought Aircraft Sales Co., with shops at Fort Worth and Longview, Texas.

"Folks tell us our new four million dollar business flying terminal is the world's finest. Bosses talking about more hangars.

"Engine plant expanding for umpteenth time. Prospects bright for contracts to overhaul airline jet engines. Still going great guns on jet engine overhauls for USAF and Navy, and on piston engines for private owners.

"Volume up at parts distribution divisions in Dallas, Kansas City, and Denver.

"Aircraft shop, with new specialization and flat rates, busier than ever. Leading radio and instrument shops moving into quarters leased in SAC hangars.

"No end in sight. This is only the beginning. I've hitched my wagon to a sure-enough star!"

Southwest Airmotive Co.

LOVE FIELD, DALLAS
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Circle No. 23 on Reader Service Card

"Spirit of Seattle" Helio-Courier To Philippines for Missionaries

A Helio-Courier airplane has been given by the City of Seattle to the Philippines Government for use of the Jungle Aviation and Radio Service of the Summer Institute of Linguistics for its linguistic missionary work among the indian tribes of the islands.

Christened "The Spirit of Seattle" by Mrs. Garcia, wife of the Philippines' president, the plane was presented in a ceremony attended by Vice President and Mrs. Richard Nixon.

The 20-year-old linguistic-missionary organization which reduces primitive languages to writing and then translates the New Testament into them, already is working on nearly 200 languages in Mexico, Peru, Ecuador, Bolivia, the United States, Canada, Alaska, Guam, Australia and Vietnam.

The Jungle Aviation and Radio Service, the department of the organization composed of pilots and airplane and radio technicians, maintains a fleet of 18 airplanes in Ecuador, Peru and Bolivia to fly regularly into otherwise inaccessible jungle and mountain bases. The "Spirit of Seattle," JAARS' seventh Helio Courier, is the organization's first plane in the Philippines. It is the sixth Courier contributed to the Summer Institute of Linguistics by communities in the United States.

Dr. W. C. Townsend, president of the Summer Institute and JAARS, founded the Institute in 1934 in the Ozark Hills of Arkansas to prepare pioneer missionaries in the fundamental principles of language reduction and Bible translation. The JAARS organization was founded in 1946 to begin work in jungle areas inaccessible except by airplane.

Dr. Townsend early in his career felt aircraft were necessary in order to accomplish his work. Mayor Gordon S. Clinton of Seattle, Wash., long a friend of the linguistic missionary organization, took an active part in sponsoring the drive which resulted in the donation of the new "Spirit of Seattle" to the group.

Others present at the presentation included Undersecretary of Commerce Walter Williams; Lynn L. Bollinger, president of Helio Aircraft Corp.; and Lawrence Montgomery, superintendent of aviation for the missionary group.

The Helio Courier is noted as the only STOL (Short Take-Off and Landing) fixed-wing airplane manufactured in the United States. It has a flying speed range from 30 to 160 mph. (See Skyways, November 1957, page 43.)

Canadian Report

(Continued from page 28)

partment personnel operate the air traffic control towers.

Landings and takeoffs for May, 1958, totalled 300,687 compared with 268,546 for May, 1957.

Busiest airport in Canada was Vancouver with 33,380 arrivals and departures, followed by Ottawa with 28,247; Montreal with 25,604.

In the preceding month, Ottawa was the most popular airport in Canada with 26,780 takeoffs and landings, followed by Vancouver and Cartierville at Montreal. The sum total for the 27 DoT operated fields across Canada represented a fat 12.5% increase over the same period a year ago.

Names Make News

Appointment of R. E. McCullough as manager of the maintenance hangarage operations of Field Aviation Co. Ltd., Calgary, Alberta, has been announced. He will manage Field's new business aircraft hangar at McCall Field.

Karl Fritsch has been named Chief Development Engineer at Vertol Aircraft Co. (Canada) Ltd. He is added to the Vertol staff as part of the company's expansion and diversification program.

R. J. Quigley has been named manager of the aircraft sales division of Field Aviation Co. Ltd. For the last year he has been in charge of Field's Western Canada aircraft sales activity based at Calgary. He replaces Buff Estes, now with Beech Aircraft Corp.

School For Business Fliers

A flying school giving specialized training to business men wishing to fly or to persons interested in aviation as a career, was opened last May at Fort William.

Named the Lakehead Flying School Ltd., the new company is headed by O. J. Weiben, president, who is also president and owner of Superior Airways Ltd. Facilities of Superior Airways will be used by the new subsidiary.

The school's fleet will be made up of Cessna aircraft, some of which are equipped with floats. To provide beginners with a better insight into flying off floats, the private pilots' course will include two hours dual instruction on seaplane flying.

In 1941 Mr. Weiben organized Superior Airways and since then has developed the company to its present status. During World War II, he was chief test pilot for Canadian Car Company Ltd.

Chief instructor for the new school is D. B. Mullin, whose flying experience includes six years wartime bomber operations with the RCAF. As manager of Superior Airways, Mr. Mullins has also gained a wide knowledge of commercial aviation.

Timmins Acquires Manufacturing Rights

Timmins Aviation acquired sole manufacturing and distributing rights for the Lakeshore Engine Porter and Tilt-Arc Slings.

The Engine Porter and Tilt-Arc Slings are advancements in the engine handling fields.

Bendix Red Bank offers

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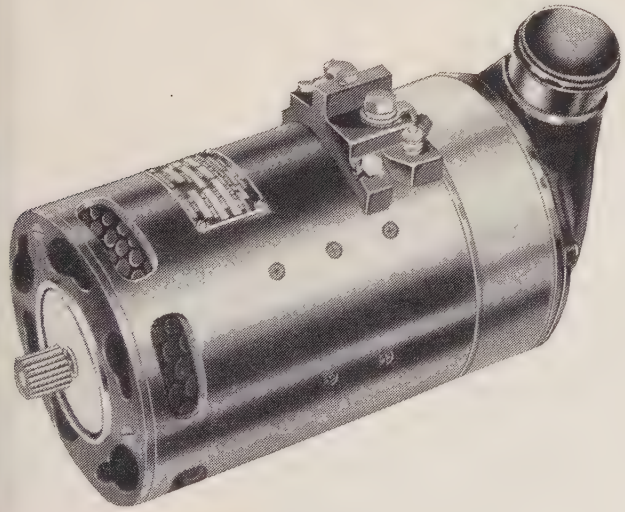
AIRCRAFT MAKE AND MODEL	ENGINE MAKE AND MODEL	APPLICABLE BENDIX DC GENERATOR TYPE
Aero Commander 520	Lyco GO-435-C2	30B24
560	GO-480-D1A	30B24
	GO-480-D1C	30B24
	GO-480-C1B6	30B24
680	GSO-480-A1A-6	30B33, 30B24
Beech A45 (YT-34)	Cont E225-8	30B24
H-35 Bonanza	O-470-G	30E22
D-18S & E, 18S super, 18 twin	P & W R985-AN4, AN14B & B5	30E16, 30E01
50, 50B & 50C	Lyco GO-435-C2, C2D6, or C2B	30B33, 30B24
	GO-480-F6, F1A6 C2C6 or C2D6	30B33, 30B24
D-50	GO-480	30B33, 30B24
E-50	GSO-480	30B33, 30B24
G-35	Cont E-225-8	30B24
Cessna 180	Cont 0-470-A or K	30E22
182	0-470-L	30E22
190	W-670-23	30E01
305A & B	O-470-11 or 15	30B24
310	O-470-B or M	30E22
321	O-470-2	30B24
620	GSO-526-A	30B33, 30B24
Convair 240, 340	P & W R-2800-CA-15-18, CB16-17	30E02
440	R-2800-CB-17	30E02
Curtiss C-46	P & W R-2800-43	30E16
de Havilland Beaver DHC-2	P & W R-985-AN6B	30E16
Otter DHC-3	R-1340-S1H1-G	30E16
Douglas DC-3	P & W R-1830-92	30E16
DC-3	P & W R-1830-75 & 94	30E20-11 or 30E07-11
DC-6	R-2800-CB-16, -17	30E02
DC-7	WR 3350	30E02
Fairchild C-82	P & W R-2800-85	30E02
Grummond Widgeon G-44	Ranger 6-440-C5	30E01
G-73	P & W R-1340-S3H1	30E01, 30E16
Lockheed Constellation	WR 3350	30E02
Lodestar / Learstar	P & W R-1830-75 or 94	30E07-11 or 30E20-11
Ventura	P & W R-2800-83-AM-10	30E02
Super-Ventura	R-2800-83 or CB-16	30E02
Martin 202	P&W R-2800-CA-3, 15-18	30E02
404	R-2800-CB-16	30E02
B-26	R-2800-43, or CB-16	30E02
Piper PA-18-150	Lyco O-320	30E22
PA-23, PA-24	O-360	30E22
PA-22-150	O-320	30E22
Taylorcraft 400, 500	Cont O-470-J	30E22
Topper, Sea Bird	O-470-J	30E22
Vickers-Armstrongs Viscount	RR Dart 510	30E02



BENDIX RED BANK DC GENERATOR PERFORMANCE DATA

TYPE NO.	NOMINAL RATING AMPS.	SPEED RANGE—RPM	APPROX. WT. LBS.
30B24	50	4000—8000	14
30B33	150	4700—8000	28
30E01	50	2200—4500	24
30E02	300	3450—8500	62
30E07-11	200	3000—8000	45
30E16	100	2500—4500	39
30E20-11	300	4000—8000	46
30E22-1	50	4000—8000	14
30E22-2	(Same as 30E22-1 Except Clockwise Rotation)		

Red Bank Division

Bendix AVIATION CORPORATION

Circle No. 25 on Reader Service Card

EXPERIMENTAL AIRCRAFT ASSN. FOSTERS AERONAUTICAL DESIGN INGENUITY

by William D. Hoehnen

There's a saying that "from little acorns big oak trees grow." There is certainly a parallel in the Experimental Aircraft Assn. in which big airplanes from little thought seeds grow.

Physically, the experimental aircraft developments may not be big, but in contribution potential to the aircraft industry as a whole, they're tremendous.

The EAA is an international organization with 37 chapters including the Ultralight Aircraft Assn. of Canada. Membership totals 3,500 persons from all parts of the world including Sweden, Australia, Japan and Brazil.

Founder and International president is Paul Poberezny of Hales Corners, Wisc. His purpose in establishing the organization (1953) was "not only to give men the opportunity to incorporate their own ideas in a plane, but also to teach the fundamentals of aviation such as design, economy, etc., and to give our country a strong background in aviation. Primary objective is to achieve a utilitarian use of smaller aircraft, to perfect a plane that will have economy, performance, utility and be within the price range of the average man."

An oil company executive pilot, Elmo Maurer of Tulsa, Okla., as an EAA member has modified his plane so that it "runs just as well upside down."

Effects of the EAA have penetrated schools. For example, students in the aeronautics class at St. Rita's High School, Chicago, Ill., built a specially designed plane as a class project under the supervision of Robert Blacker, aircraft mechanic, commercial pilot and government inspector. Of the graduating students of the class, 40% have continued with aviation as a career.

Although several of the home builders ideas are used on today's aircraft, none can be credited to any particular individual except the spring steel landing gear used on Cessna aircraft. This was designed by Steve Wittman of Oshkosh, Wisc.

To continue the flow of new ideas in aviation, the EAA is sponsoring a Design Contest to be held in August, 1959. Prize money is $5,000.

Through an organization as the EAA with ingenuity and know-how the aircraft industry of the United States gains strength.

CALIFORNIA AVIATION EDUCATION DEPT. *received a Cessna 180 from Air Oasis Co. of Long Beach. Larry Hunt, right, president of Air Oasis, hands keys of the new plane to W. Earl Sams, Dept. of Education consultant as Mrs. Marian Wagstaff, past-pres. of the Calif. Aviation Education Assn., looks on. Presentation was made during the annual conference of the group. The 180 replaces a Cessna 170 used for past two years.*

NAVICOM

(Continued from page 23)

informally revealed that both Continental and Lycoming are going heavily into fuel injection this coming year. General Aircraft Supply of Detroit supplied a colorful touch with their aesthetic color schemes for the most popular business aircraft employing DayGlo high conspicuity paint for beauty as well as safety.

NEW NARCO CS-5 *all-purpose cross pointer indicator provides VOR, ILS localizer guidance, glide path indication, To-From flag, selected and reciprocal course information, plus fail-safe flag alarms. The indicator fits a standard 3" cut-out and is only 2¼" deep. Designed to be used with the Narco VCA-3 converter, the whole weight under 6 lbs. and costs $685.*

Circle No. 26 on Reader Service Card

Low Drag Fixed Loop Adaptable To Current ADF's

A new semi-flush fixed ADF loop designated the Goniometer System has been designed by the LearCal Division of Lear, Inc., to replace present conventional external "rotating" loop ADF antennas or sub-surface loops of greater weight. The new system is easily adaptable to most ADF's now in use, including the latest ADF-12 models.

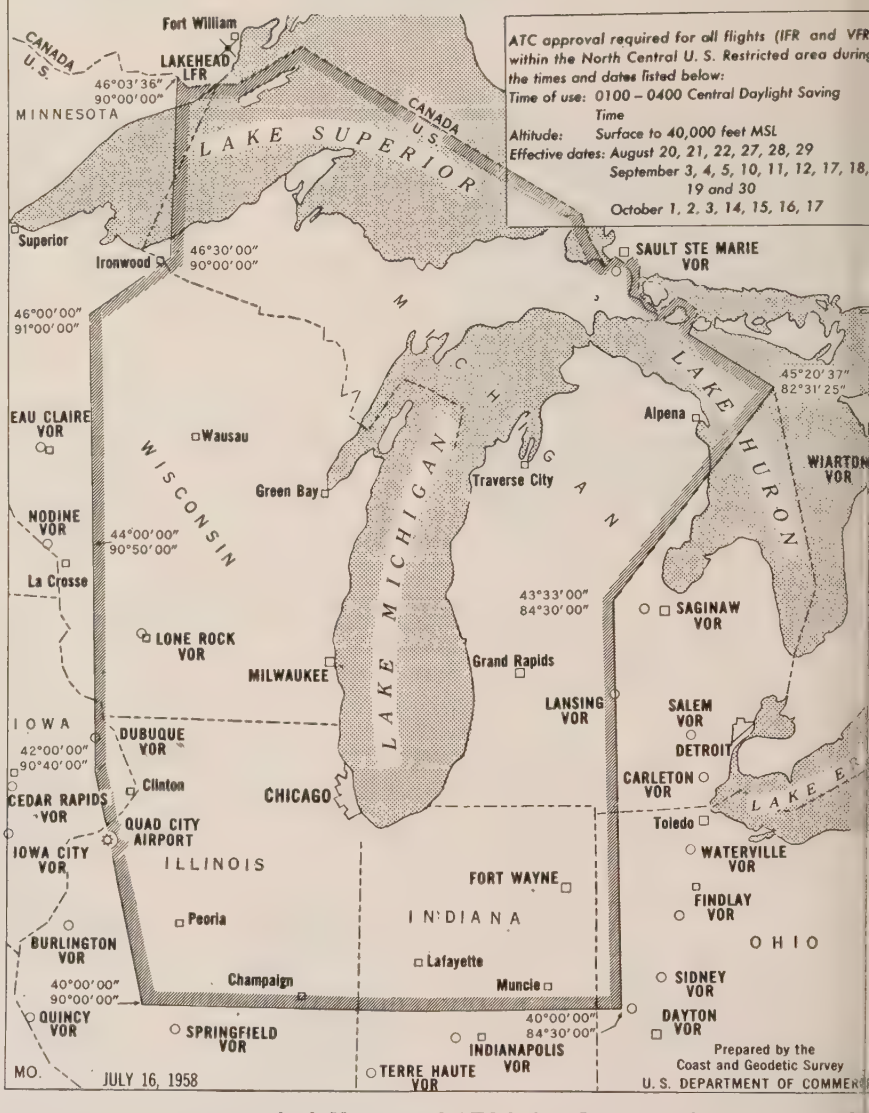
Compared with loop antennas which protrude into the airstream, the Goni antenna is one-inch thick, flat, tear drop-shaped unit which fairs smoothly into the fuselage, thus reducing drag. It may be mounted on top or bottom, is "lifetime" sealed against weather damage, contains no moving parts and offers considerable improvement in signal pickup, Lear claims.

A tiny remote sensing device, called a Resolver Transducer, located internally in the aircraft duplicates the output of a standard rotating antenna, completing the system which weighs five-and-one-third pounds. It requires no supporting structure except the aircraft's skin, eliminating heavy substructure required to support conventional loop antennas.

The CAA certified the Goniometer System under TSO-C41.

(Continued from page 42)

SPECIAL NOTICE



PILOTS ARE CAUTIONED to check Notams and ATC before flying into the area surround Lake Michigan, outlined above, during times and dates indicated.

Scientists Take New Look At Vision

New aids for pilots in blind flight were discussed at a symposium sponsored by the Armed Forces—National Research Council Committee on Vision at the Smithsonian Institution, Wash., D. C.

Reporting on new techniques in blind-flying, Commander George W. Hoover advised that the Office of Naval Research project has developed a flat, phosphorescent screen for the electronic projection of visual images. The screen can be made flat because electron emitters which light up its phosphors in a moving design are beamed from the side of the screen rather than from behind as in the familiar radar or tube. The flat-screen tube developed in the ONR project could be mounted flush against a wall, taking up lit more room than a framed painting.

Its more pressing use, however, is the windscreen of aircraft where, co nected to a battery of sensors and an log computers, it could replace t direct view of the pilot with a series visual images that would provide h with a current picture of the aircra position and direction in relation to t terrain.

Interest in the ONR project has be heightened still further with the dev opment of a transparent phospl screen. The transparent screen will p mit the installation of the screen rectly in front of the pilot's vision— be looked *through* during periods sufficient visibility, and to be switch on and looked *at* when visibility fa

EN

AERO DESIGN PLANS SUPPORT OF JET TRANSPORT AGE

INESS AIRPLANE HAS A NEW ROLE *supporting major airline service. Northern Airlines sing an Aero Commander for feeder-line service from its home base at Fargo, N.D. ne Strand, left, president of Northern, and Bruce Aga, general manager, are shown in t of one of their executive-designed aircraft turned airline helper.*

ooking with a candid eye to the l near future, Aero Design and En- eering Co. has plans for the ex- ded use of the Aero Commander. he soon-to-be commercial jet air- service will bring with it certain blems with its inauguration. Key blem is the inability to serve rela- tively small airports which are now accommodated by, considered by some, obsolescent propeller-driven aircraft.

The Aero Commander is being groomed for use as a feeder-type airliner to offer "fast, efficient, highly flexible service from the smaller cities to interconnecting transcontinental terminals." Northern Airlines has already stepped into this role.

This expanded use of an airplane designed basically as an executive craft may lead the way for other manufacturers of similar size aircraft. Model 500 is Aero Commander's most recent entry to this business plane field.

SAFETY DIGEST

RICHARD W. GROUX, *Assistant to Executive Director NBAA*

Compiled and edited from leading air safety publications issued by military, naval, airline, government agencies and from private and business pilots' experiences.

Operation Skywatch

Recent mid-air collisions under VFR conditions have caused many operators to reevaluate their procedures to insure greater safety in-flight.

Here is a "VFR Procedure" sent us by John E. Powers, chief pilot, International Business Machines Corp. Check these against your VFR procedures and see how they can be applied:

VFR PROCEDURES

1. **Check Lists:**
   - A. Reduce all check lists to a minmum.
   - B. Approach descent should be be completed prior to entering a control zone. All items except gear will be on this list.
   - C. The approach descent check list will be accomplished by the pilot not flying, and he will call out items as accomplished.
2. **Paper Work:** Paper work will not be accomplished during take off and landing nor during climb and descent. Pilots will hold any paper work to a minimum, preferably waiting until they are on the ground.
3. **Log Book:** Log book will not be filled out in flight.
4. **Pilots Leaving Cockpit:** Pilots will not normally leave their seats in flight. If it becomes necessary to deviate from this rule, they will hold their time out of their seat to a minimum. If a third crew member is available, he will occupy the vacated seat.
5. **Fluorescent Paint:** The airplanes will be painted with this paint in accordance with the recommended specifications as to place and amount of area to be covered.

"Pilot to control tower. By George, you were right. I was in the instrument approach pattern and without fluorescent paint!"

6. **Traffic Patterns at Uncontrolled Airports:**
   - A. Aero Commander and Beechcraft will enter at a reduced speed at 800′ in order to see light planes flying in the traffic pattern.
   - B. DC-3 and Convair will approach at a reasonable altitude and will not attempt to enter the pattern until traffic, if any has been spotted.
7. **Climb & Descent in Congested Areas:** The pilots will be especially observant during climbs and descents at all times and, if possible, will be more observant when in congested areas.
8. **VFR on Airways:** Pilots will avoid flying directly on airways when on VFR flights and will not fly at an altitude that would conflict with oncoming traffic.
9. **Training Flights and Hood Checks:**
   - A. If practical, we will use a 3-man crew on training flights.
   - B. On all hooded flights there will be a third crew member using the jump seat.
   - C. On 6-month proficiency checks, the check pilot will ride in the jump seat.
10. **Flying VFR Through Control Zones:** When flying through control zones such as New York, Boston, Washington, etc., the 1st pilot will be sure that contact is made with proper controller, whether it be the center, approach control or the local control. He will inform said controller of his intentions, giving position, altitude and course.
11. **Radio Standby Procedures:**
    - A. One pilot will stand by on enroute frequency at all times.
    - B. When passing near or over a radio controlled airport, it is suggested that one pilot monitor the tower frequency for traffic information.
12. **Whenever Practicable,** pilots will file IFR through areas where marginal VFR conditions are known or expected to exist.
13. **Transition From IFR to VFR:** When approaching an airport that may require a circling approach:
    - A. If practical, the pilot will land straight in, if the tail wind component is less than 10 mph, and runway is of suitable length.
    - B. Land straight in if the cross wind component is less than 15 mph.
14. **Pilots will be required** to call attention to all traffic sighted.
15. **It is the 1st pilot's duty** to see that the windshield is kept clean at all times.

Performance ABC's

The pilot had directed that his aircraft be loaded so as to not exceed maximum equivalent weight for a scheduled early morning takeoff from a desert port. Upon computing a weight balance form prior to takeoff, he fo the weight excessive. He brought to the attention of the controller, was told that the load had been pi icated on a lower temperature dicted for takeoff time, an hour aw A conference with the forecaster sho this to be true and clearing continu

Takeoff appeared normal in all spects until the plane was airborne gear retracted. With maximum po on the engines the aircraft was sl gish and rate of climb had to be h under 100 feet per minute to rea even a slow increase in airspeed. sandy desert floor, visible in the li of the wing illumination lights, con ued to slide by uncomfortably close the belly of the big plane. The engin called for reduced power as the inder heads approached the red li The pilot, desperately playing airsp vs. climb, ordered full power left Opening of the cowl flaps would h helped cool the engines, but would h also increased drag. The high tem atures also were cutting down power output of the engines.

The meaning of "the altitude a you and the runway behind you" came painfully clear.

Slowly, ever so slowly, the airsp increased. Finally power could be duced.

Subsequent investigation disc that the runway temperature had dropped to the figure on which tak had been based. Also, there was 1,000 pounds of unmanifested cargo board the aircraft.

Why?

Insofar as aircraft performance concerned a lot of bridge crossing to be done in advance. Performa engineers have provided operators information necessary to permit mum performance operation of airc However, the margin between optim performance operation and unsafe eration is so narrow in some cases an understanding of basic princi of aircraft performance as well as solute adherence to charted opera is mandatory.

There are some, relying on "built-in margin of safety" th rather than knowledge, who cling sort of seat-of-the-pants philoso They operate neither efficiently safely. There are also some who, cause of lack of knowledge, operat far under maximum performance tations that they fail to realize benefits which result from optim performance operation. We might a

gorize these operators as the "non-essionals."

Tools

o provide the operator with the s needed for achievement of de-ed performance, modern aircraft e equipped with operating manuals, ts and tables. Understanding of the ciples on which this information is d is essential if intelligent applica- is to result and if the maximum ee of safety is to be attained during rgency situations.

pre-requisite for discussion of air- t performance is understanding of NACA standard day since it is used basis of most performance chart table construction. Characteristics his hypothetical day are: Pressure ea level 29.92 inches; density alti- at sea level zero; temperature at level 15° C.; force of gravity at sea l 32.1739 ft/sec/sec; the lapse rate roximately 2° and 1" Hg per each 0 feet.

erformance charts enable the oper- to take into consideration varia- s from standard conditions and r effect on aircraft performance. way of expressing this variation ie term "equivalent weight," which ssence means that the aircraft will orm as if it weighed this "equiva- " amount and standard day condi- s existed.

arious factors which markedly affect raft performance are treated indi- ally in this discussion. They are:

Temperature

ee air expands directly as tempera- increases and the weight (amount) ir per unit volume decreases. Be- e of this, less air can be introduced the carburetor, and therefore, er is lost. This power loss can be rtained from charts and is less for throttle operation than for full tle operations.

Humidity

wer losses result when humidity is e standard because:

) A portion of the dry air is re- d by water vapor which weighs about 5/8 as much as dry air.

) Fuel/air ratio is increased (en- d) because fuel is metered ac- ng to total flow through the car- or venturi.

) Thermal efficiency of the com- on process is reduced because of resence of water vapor.

nen specific humidity is above ard the power loss must be de- ned from the specific humidity , adjusting for existing pressure de conditions when necessary.

Mechanical Deficiency

power loss due to malfunction or djustment of some engine compo- is as worthy of consideration in cted performance planning as is iciency due to atmospheric condi- Horsepower deficiency scales on rmance planning charts are to be when such a discrepancy exists. ficient engine should always be ed to full power by proper main- ce at the earliest opportunity. ce predicted brake horsepower loss from humidity and temperature has been ascertained, mechanical deficiency, if any, can be observed by noting the amount the BMEP gauge indicates on takeoff. If takeoff performance has been properly figured, any additional loss is due to mechanical deficiency. In all subsequent aircraft performance planning this loss should be taken into account until the necessary repairs have been made.

Wind

Wind on takeoff cannot be discounted in figuring aircraft performance. Because of this, a wind component section is included in charts used to predict critical field length.

Runway Slope

On many runways the takeoff can literally be an uphill proposition. When this is the case and temperature, humidity and field elevation or other performance affecting factor pushes the aircraft weight to the critical equivalent weight, a slight runway slope can become the "last straw" if it isn't taken into consideration. A slight upslope increases both the takeoff roll distance and the critical field length requirement and must be a part of predicted performance planning.

Field Elevation

As every pilot knows, as an aircraft climbs, power output decreases with altitude. Pilots should acquaint themselves with engine power charts for the equipment they are using in order to accurately ascertain the "standard day" power output at higher elevations. For example, let's assume that for an engine developing 3,000 BHP at sea level on a standard day we find that the same engine develops 2,900 BHP at 2,000 feet on a standard day. When operating out of an airport at the 2,000 foot elevation we should deduct all predicted power losses from 2,900 BHP figure.

Conclusion

No matter what airplane you fly, it has a maximum takeoff weight. It also has an "equivalent" weight which may be either above or below the actual weight because of the factors enumerated above.

To remain within designed stress safety factors "actual" weights, such as gross takeoff, zero fuel and landing, must not be exceeded.

To remain within acceptable safe performance limitations, equivalent weights also must not be exceeded.

Only in hangars do we now fly with such ancient aviation paraphernalia as goggles, Gosports and guy wires. The "if she'll taxi, she'll fly" criterion has gone the way of the hand-operated wobble pump and has been replaced by the accuracy of the slip stick, performance charts and technically skilled airmen.

At the moment we are flying on the edge of the guided projectile phase of aviation development where performance limitations are more critical than the old wing walker's sense of balance.

And, if we don't understand and practice performance planning procedures now, we stand a good chance of not being around for the previewed space age. (MATS FLYER)

Wouldn't Unfeather

"Prior to takeoff on a single-engine indoctrination flight in an S2F (Grumman Tracker) a feathering and unfeathering check was made as per squadron doctrine. The check proved satisfactory and takeoff and climb to 6,000 feet was made without incident.

"After instructing the student in single-engine procedure, the starboard prop was feathered, engine secured and the plane trimmed. Practice turns were made and ten minutes later several attempts were made to unfeather. The prop would not unfeather so an uneventful single-engine landing was made.

"Upon returning to the line a mechanic who was flying in the plane as aircrew said that after the feather button was pushed in it did not pop out again for some time. A check of the starboard oil tank proved it to be empty, but the engine itself was filled with oil.

"The prop governor was removed and sent to O&R where it was found that the pressure release solenoid (set for 650 psi) did not release until 850 psi was applied. This caused the feathering pump to run overtime and pump all the oil from the tank into the engine, leaving no oil for the unfeathering operation.

"Although a feathering and unfeathering check prior to takeoff is an excellent practice, it does not preclude inflight failure. If I had watched the feather button to see that it popped out, or had checked the ammeter for a current drop which occurs when the feather motor stops, I could have manually stopped the motor on time and thus prevented a single engine landing.

"I recommend that whenever a single-engine occurs, or is given intentionally, the pilot or copilot watch the feather button and appropriate ammeter to determine that the feather motor cuts out at the required time; and if it doesn't, to pull out the feather button manually to the neutral position." (APPROACH-USN)

Better Safety Information on Business Flying Sought by NBAA

Accident investigation on aircraft below 12,599 lbs gross should revert to CAB and be given wider publication for benefit of all general aviation, says NBAA. In commentary before the House Committee re: the Federal Aviation Agency Bill, William K. Lawton, Executive Director, National Business Aircraft Association, further pointed out that while the CAB should have the right to review FAA decisions on rules, regulations or minimum standards where a "substantial air safety hazard" is involved, it might be better for the agency to start without this essential check rein and add it by amendment later.

Mr. Lawton also told the committee that the emphasis on ATC "as the

total solution to . . . air safety . . ." should not permit ignoring the safety problems created by the increasing lack of support of the civil weather reporting and forecasting services. Despite the all-weather capability of the airlines plus their own weather services, weather figured highly in 1955-56 airline accidents. Their increasing emphasis on ATC held no cure here nor will it for general aviation.

Round Table

(Continued from page 18)

quickly as you do with 80/87. But that is the only time, and I would say, as soon as you can, go back to 80/87 fuel. We tear down engines and see differences between 80/87 and 91/96 that are amazing . . . the lead content in the fuel.

Custer: In that case then, improve the cowling, such as the Conrad or various other configurations. But why placard the tanks at 91 on the Super which has better cooling?

Rhodes: We've gone into that pretty heavily, because we don't particularly agree with this 91/96 octane in an E18. Beech apparently only had 91/96 octane fuel when the airplane was certified, and the specifications reflect that. CAA will not change it nor will Beech because of the expense involved. I'm informed by Beech, CAA and Pratt-Whitney that all that is required to use 80/87 legally, is to get somebody to bear the expense of the necessary flight test.

Custer: Well, pre-suppose that I'm using 80/87. I experience an engine failure in a Super, and I'm under the warranty period. Is the engine overhaul agency going to come back and say that's because I used 80/87?

Rhodes: Probably not, you're permitted to use the 80/87 fuel in the basic engine.

Custer: But I still have to leave the 91 sign on the tank?

Rhodes: As the book reads today . . . yes.

Custer: What do I say to the insurance company if we wrap one up?

Rhodes: I don't know. The Super 18 is technically not legal using 80/87 fuel. What we're concerned with essentially is how the engine is rated, the maximum horsepower as Pratt-Whitney writes the specification. The type you would be using in the Super 18 Beech is rated for 450 maximum continuous horsepower on 80/87 fuel. Now there's nothing against your using 91 octane fuel. You can go up, but don't go down. Our recommentation is, when possible, stick to the lower lead content because of effect on your valve guides and the effect on the sludge pots in your engine. Let your conscience be your guide.

Weitz: The next subject is inspection standards and charges. We're talking about aircraft periodic or progressive inspections. This is a rather touchy subject with some people in that they ask to have it inspected and they g bill of $200 or $300. After the sm salts have been administered the cover that the actual inspection about $20, and the rest of it wa work found necessary on the in tion. Joe Rhodes.

Rhodes: In dealing with the cust it depends upon the type of air he's flying and his understandin our terminology and ours of his. come in and ask for a periodic in tion and want to know how much it cost. We can tell him what the in tion labor will cost, but all repairs be beyond that. If the work has done, the go-ahead will be given. the work is completed, however, times the owner complains that u essary work was included. As a g large airplane owners are more i ant that higher standards of m nance are adhered to. Small pl as a group, are not adapted to so-c "big plane maintenance." They the same standards as big craft re The separating line between big small plane maintenance is, in ge at the Bonanza-Navion level. Sm aircraft maintenance standards ar and intended to be so by the man turer. When you do a "big plane on the small plane, even if you warn the owner cost-wise, he's up the final price.

Weitz: Do you think it would h the maintenance facilities had a p sheet which would tell the cus

t the basic charge is for the inspec- and exactly what it covered, mak- it clear that if, *as a result of the ection,* there would be additional ges, the owner would have the pre- tive of turning it down? Has any- g been done along those lines?

des: Quite a bit. The National Avi- n Maintenance Council came out a pamphlet, the "Ten Command- ts," covering the subject of first ng details on exactly what the cus- er is to be charged for. I think 's being done by industry in gen- right now. But still some misunder- ding comes up because the owner doesn't want to commit himself rehand. He says go ahead, and he s that if he leaves it up to your grity, you'll have a guilty con- nce about the final bill. Mainte- ce organizations depend on the cus- er for a livelihood and don't want heat him. But at the same time they 't want to be cheated.

tz: I think it would be practical for y shop in the business, especially re they're dealing with a new owner no experience in aviation, to get point over clearly. This particular ect is the cause of more complaints ived by CAA than any other, and, Joe pointed out, there is a very dy picture with respect to inspec- standards. I'd like Paul Kovac to ain what standard Lockheed uses n they're running their inspections, ressive or otherwise.

ac: We actually have many types of inspections and maintenance func- tions being performed. Maintenance Plans have been written to allow an operator to keep his airplane in the air the maximum number of days in a week, or days in a month. We subdivide the inspections and component re- movals among the 100-hour inspection periods to permit an equalized work load, thus avoiding long "out of serv- ice" periods. In this manner an air- plane is always available to an operator after a relatively short period of time for maintenance services.

Some operators may find it advisable to fly the airplane all week and leave the airplane on the ground over the week-end. We would do the work at that time. Or, he may find that he would like to fly 365 days in the year with a fleet of three airplanes and never take an airplane out of service for more than four or five days at a time. With the equalized maintenance plan, as we call it, and some people call it the Progressive Plan, the airplane sometimes flies as much as 10 to 12 hours average a day. We have one oper- ator with a fleet of four airplanes on which we have subdivided the major overhaul items and do not keep an air- plane out of service for more than 5 or 6 days at any time. And, of course, we've got a large crew available where it is possible to assign a large number of men on the job if necessary. In this way a large volume of work is done in a comparatively short time. We have operators, whom you might call "drop-

TALKING *it over are Allan H. Mogensen, left, Alfred E. Custer, forum participants.*

ins," who would like to have specific inspections for which we quote a basic price. Anything found faulty outside the inspection is "over and above."

Weitz: Ed Kelley, on this matter of standards . . . let's say an airplane in the shop has a certain amount of play in the control hinges. The repair of that is pretty expensive. In one shop, the repair is considered necessary. In an- other shop, with all good faith, the con- dition is considered all right. How does Reading handle this with respect to actual standards?

Kelley: We use whatever manufactur- er's specifications are set up. When it becomes a thing of judgment, our qual- ity control department is the deciding factor. If it involves an extensive repair or change with money involved, the customer will be notified immediately before the airplane is put together. If

The Law Behind the Skyways

by Howard Newcomb Morse, *Counsellor at Law. Member of the Bar of the Supreme Court of the USA*

"The Relationship of C. A. R. and State Statutes"

If a pilot were to be charged simultaneously or successively for the same civil (aviation) offense in both federal and state jurisdiction, would it be "double jeopardy"? Mr. Morse discusses this interesting point this month. In another area of interest, the right of commercial field operators and their tenants to pursue their occupation can be and often is jeopardized by local community ordinances. The second half of the piece treats of this matter in an outstanding case.

In the case of State vs. Dickens, decided by the Supreme Court of Arizona, a licensed airplane pilot was prosecuted by the State of Arizona for having committed a criminal misdemeanor in flying "at such a low level as to endanger the persons on the surface beneath." The pilot defended the charge by pleading the Arizona immunity statute to the effect that one is immune from state prosecution if he is subject to federal prosecution for the same offense.

The Court rejected this contention, saying that: ". . . though federal laws do prohibit the kind of dangerous low flying indulged in by this defendant, still, the penalty provided under federal law for this offense is, we believe, a *civil one;* while Arizona's immunity statute, as we read it, contemplates immunity from State prosecution only in the event of the possibility of *criminal prosecution* by the United States." So, unless a state criminal offense regarding flying is also a federal criminal (rather than civil) offense, a pilot prosecuted in a state court cannot escape punishment by attempting to avail himself of the state immunity statute.

"The Relationship of C.A.R. and Municipal Ordinances"

In the case of Allegheny Airlines, Inc. vs. Village of Cedarhurst, decided by the United States Court of Appeals for the Second Circuit, an airline and individual air pilots whose employment requires them to pilot aircraft to and from Idlewild airport sued to enjoin the enforcement of a village ordinance prohibiting air flights at less than 1,000 feet when passing over the village of Cedarhurst, New York with respect to take-offs from, and landings at, the nearby airport.

The village defended the suit on the ground that the operation of aircraft over it in taking off from, and landing at, the flying field at altitudes of less than 1,000 feet constituted a "taking" of the property of the residents of the village in violation of the Fifth Amendment to the Constitution of the United States.

The Fifth Amendment states that: ". . . nor shall private property be taken for public use, without just co pensation."

The Court rejected this argume basing its decision on C. A. R. secti 60.17 (14 Code of Federal Regulation entitled "Minimum Safe Altitude which specifically exempts take-offs a landings in prescribing minimum a tudes below which aircraft may not

The Court declared that: ". . . ancient common law doctrine that ov ership of the land extends to the zen 'has no place in the modern world' . 'Flights over private land are not *taking*, unless they are so low and frequent as to be a direct and imme ate interference with the enjoyment a use of the land.' . . . the operation aircraft over the Village of Cedarhu in landing at and taking off from Id wild, occurs at altitudes of from 4 feet upward to 1,500 feet . . . a gr majority of flights would be at altitu of 1,000 feet or above . . . aircraft not operate continually over the Villa at even these altitudes but only un particular weather conditions and the use of particular runways un various sets of circumstances wh make it impossible to be precise as the number of flights over the Villa at any specific altitude . . . there is evidence that the operations constit a trespass or nuisance to the people the Village. Such findings preclude possibility of finding a 'taking'."

Round Table

it's a matter of judgment that does not affect the safety of the airplane, we leave the decision to the customer. We find that the customer knows his airplane pretty well.

Weitz: Before opening this topic to the floor, I wonder if Joe Rhodes might explain briefly what the National Maintenance Council is and what the organization is attempting in respect to standards.

Rhodes: The National Aviation Maintenance Council is a division of the National Aviation Trades Assn. It is formed primarily of maintenance organizations for a joint meeting of minds, to try to set up a list of standards that will suit industry in general and the member operators. Further, the purpose is to have all members working on the same basis and have, more or less, a standard system for charges and methods of doing business. The nationwide organization reflects problems on a national basis, and the membership benefits from that by many bulletins and an annual meeting. It gives maintenance an organization with Washington representatives so necessary to keep our interests from being overlooked in this day of restrictive legislation. CAA has given us its wholehearted support, but more members are needed.

Weitz: Any question from the floor?

Voelter: I have to refer back to light aircraft, my field. We continuously hear from light aircraft owners that large, well-kept aircraft shops appear to be discouraging inspection and maintenance of light aircraft. What is the real situation?

Rhodes: I don't believe this condition exists. We try to explain types of maintenance. As far as Atlantic is concerned, we've spent years to establish a set of high standards for our personnel. These standards are set up for what we call "big aircraft type maintenance" where everything is fairly critical. On the other hand, there is what we term "cub maintenance." The very light airplane is just not designed to have big aircraft type maintenance.

When a light plane comes into a shop that has been working exclusively on the other type of maintenance, it's going to lead to grief somewhere along the line because a group of men cannot change overnight from one type of maintenance to another. What happens is that the light plane comes out of the big plane shop in better shape than it was when manufactured, and it costs a good bit more. The opposite generally takes place when a big plane goes into a small plane shop. I don't believe any shop that is set up for one type of maintenance can economically do the other, regardless of which type the set up to do. We cover for this by ting up divisions so all types of m tenance can be properly accomplis

Kelley: I'd like to add that, first of we do not discourage the small p owner and user. As a matter of fact, put special emphasis on it. The l fellow feels that he's pushed out i walks into a hangar with three or DC-3s. We've actually had those comments made to us.

To get more basic about the th there are considerably more Navi Bonanzas and Piper airplanes flying day than there are DC-3s. When Navion-size plane first came out n of the work was done in a shop such ours. Time went on and the smaller ports reached the point where t could handle airplanes of this s When these plane owners brought t craft back to the home base they covered that there just are not as m of the small planes around. As a re they may have a feeling of b pushed aside. However, we welcome business from the Cub on up.

Rhodes: Just as a matter of defe we don't discourage the business. welcome everybody, too, but we l separate shops.

A. H. Mogensen, *(Work Simplifica Conference)*: I have one major c

(Continued on page

THE BUSINESS CORNER *of Van Nuys Airport shows restaurant, foreground, and hangars.*

VAN NUYS — FOR BUSINESS AIRCRAFT

ike the old song, airports for busi-
ness aircraft are either too young
oo old; too small or too big. Fre-
ıtly, executive flights land at air-
s where the only facilities are low
e fuel and a coke machine or are
into a high density control area
·e planes buzz about their heads
a well-shakened hornet's nest.
icated on high speed and more
lby radio receivers than Carter has
pills, the clearances come fast and
y in short, staccato bursts. Then,
gnawing its way down to real
e, the aircraft is shuttled off by
nd Control to the sticks where the
for transportation can be a matter
ours or the walk to the terminal a
mite pack trip.

owever, someone has packaged an
ort *just* for business aircraft, and
flights sit in the peanut gallery
refreshing change,

stled in California's San Fernando
y is Van Nuys Airport owned and
ated by the Department of Air-
, City of Los Angeles, who cus-
t the airport to business aviation!
wasn't always like this for Van
was once a metropolitan airport
in 1928 when a few acres of bar-
nd some fruit trees couldn't quite
the mustard and a runway was
ed.

x Rankin came in with his Flying
is and a few years later it became
ircle-and-bounce headquarters for
well-known pilots as Frank Clark,
nd Lincoln, Ken Maynard, Herb
e, Hoot Gibson, Bill Wellman,
B. de Mille and, later, Gene
. All these hardy souls used the
pot-holed, grass-strewn runway.
ring the war the government
rated" the airport and converted
o a P-38 interceptor base. When
st blast was fired, Uncle Sam let
irport slip through its fingers into
the hands of the City of Los Angeles and the field became known as San Fernando Valley Airport.

In the last few years the City of Los Angeles founding fathers put all of their marbles in one bag and proceeded to re-design San Fernando Valley Airport into a business aircraft pilot's dream. The result is that the re-named Van Nuys Airport is one of the outstanding airports for business aircraft in the United States.

The paved runways will accommodate all types of business aircraft. The North-South runway now 6,000 feet is being stretched to 8,000 feet.

The control tower is operated by the CAA and has receivers for all normal communications and the gain is *not* turned down to hear airliners. It is kept at executive aircraft output level so that the business pilot can call the tower and get an acknowledgement without going bats.

There is no better weather in the country for landing conditions and the ideal weather permits operations more than 96 percent of the time throughout the year. But, despite what the Los Angeles Chamber of Commerce says to the contrary, they did not change the weather for business flights—that's just the way the weather balloon bounces.

When a business aircraft touches down at Van Nuys Airport, the pilot and passengers have all of the bigtime services at their fingertips. The Norman Larson Company runs a half-million dollar Business Flying Center exclusively for business aircraft needs.

The airmen's lounge is plushy and comfortable for pilots to relax and shoot the breeze before takeoff. At their leisure they can scan the latest weather sequences and NOTAMS.

For the high speed boss, an Executive Suite conference room is on the alert for on-the-spot meetings or last minute sales presentations without leaving the airport.

If the executive has a call to make in Los Angeles, he can drive a rent-a-car, luxuriate in a limousine or ride a bus. Whatever way he wants to go, the heart of Los Angeles is less than an hour away.

If he has a short haul call to make, an air charter and air taxi service is out of the side door.

A modern, 24-hour-a-day restaurant called Skytrails, is next to the Business Flying Center with the best java and steaks in the valley.

For the irrepressible pilot there is a ground school and flying school on the base as well as T-hangars for single engine aircraft.

There are 35 CAA approved aircraft repair stations in the vicinity for the "shoppers"—more than in any other area in the United States.

The recognition of business aviation has paid off for the City of Los Angeles. More than 600 local executive aircraft use the Van Nuys' facilities. Daily plane movements run about 500 and scamper up to 1200 on a good Sunday.

Under the expansion program which began last summer, the runways will be lengthened, the approaches cleared and more facilities for business aircraft will be provided such as more hangar space, wider taxi strips, high speed taxi ways and more tie downs.

The airport today is 460 acres in size, which makes it larger than New York's La Guardia or Chicago's Midway, and the enlargement program will more than double the size of Van Nuys in the next two years.

For the executive pilot flying into the Los Angeles area, the Van Nuys Airport designed for the business flying industry, is the first and finest step in the recognition of the vital importance of business aviation.

In 1670, Francesco de Lana devised a flying machine which looked like the illustration. The principle of copper spheres, made lighter than air by vacuum, was sound but impossible of construction in size and thinness to withstand external air pressure.

Round Table

(Continued from page 50)

plaint regarding aircraft maintenance work, and I know many other pilots who feel the same way. I don't mind taking my Navion to the best shop I can find or paying a stiff charge for a 100-hour, or periodic, if the work is well done. What does annoy me is this sort of thing: When I pick up the plane, we take it up for a test flight, and there'll be an oil leak. We come down. The rocker box cover is tightened. We fly. Still an oil leak. The gasket under the rocker arm box cover is changed. We fly again . . . still an oil leak. We seal the gasket. It still leaks. Then they discover one pushrod tube which has a bad dent caused, they say, by their mechanic who let a spark plug wrench slip and pulled the gasket out enough so that it leaks. I'm there about two-thirds of a day while they make sure it is not cracked and while they ream out the dent, replace the gasket and find that to have been the cause.

Now mind you, they said it was their goof, but I pay the full charge for all the time it takes to locate and repair their boner, plus the cost of the gaskets! I think the shop should absorb that charge. If they would say, "Here's where we goofed, we will make this good on our time; you don't have to pay for it," I think it would do more than anything else to clear up any feeling of dissatisfaction with the high cost of maintenance.

Weitz: You have something there, but, again, everything has a cause. I'll ask Paul Kovac to touch on it because he has some 1600 persons working for him and that's just about 50 times the problem that some little shop down the line has.

Kovac: That's quite true. With our large group of people, two of our major problems are training and turnover of personnel. We have a group of people with the sole responsibility to train mechanics. Thus, errors are minimized. However, an occasional error does occur, but our work is always guaranteed.

Kelley: That's a problem we all face, and I certainly would like to have the answer for it. In the airplane business today, the persons who work the wrenches are very conscientious, but, of course, there are times when errors do appear.

In an effort to eliminate some of these things, especially in the smaller airplanes, one of our procedures is to ask whether we can fly the airplane if it requires a flight test. We like to have this permission, and in most cases it is granted. If something wrong does appear, and the determination is made that it was our fault, we will make the repair without charge.

Scott: Our particular company operates on this "how much does it cost me" proposition. Engines come in all sorts of conditions. Some have rusty cylinders when we get them; some have no trouble at all. They may be in any kind of condition. In order to determine what it costs to overhaul an engine, w tear it down, inspect it and do certai re-work. For example, you cannot pro erly inspect a cylinder of certain typ of engines without knocking the valv guides out. That entails a certai amount of labor. We tear the engi down, and then we can estimate. We' got to come within 10% plus or minu what the end bill is going to be, an that's as close as we can human come to it.

There are certain 100% items in a overhaul. These items plus our exp rience allow us to estimate within 10 of what the cost will be. But the d cision is the customer's. If he doesn want to buy this, we don't force it o him. If he wants to junk the thing, pa for the work thus far or lay it asid until he has more money, that's his pr rogative. That is also spelled out in ou customer's specification we were tal ing about.

Scott: We've had occasion where a cu tomer, from his past experiences, woul prefer sticking to a standard cylinde Now that's an old-fashioned idea. Yo don't throw away a pair of shoes b cause the soles wear out . . . you r sole them. You can bore cylinders ou for example plus-10s, and put in ove size pistons. We tore down a Pratt Whitney and estimated it would co X-number of dollars. When we i spected it we found the cylinders di not come up to the allowable dime sions for standard cylinders. So, ins much as his specifications call for standard cylinder, we have to repla that cylinder or re-barrel it. That rais the cost way up. We re-analyzed th and suggested that he allow us to u plus-10 cylinders which is perfect legal and recommended by the facto That's where sometimes you have a di ference in estimates. You cannot ma an estimate on an engine sight unse unless you just want to gamble.

Weitz: The question of "permanen airworthiness certificates and 100-ho inspections being the same has bee mentioned. In practice, usually th mechanic who runs the 100-hour is al the Authorized Inspector. If he ru the inspection it is good for a year an is so entered in the log book and card is sent to the CAA.

The way the thing is set up, ma owners are confused about this so called permanent certificate. They b lieve that a 100-hour still renews it an their A&E mechanics are not telli them otherwise, apparently.

We printed some 200,000 bookle for that very purpose. They were di tributed by our inspectors. The boo lets explain that point very clearly plain corn-beef-and-cabbage languag I think we've done about all we c reasonably do to get the word out. It been put in trade publications an most of the shops know about it.

One thing we did to simplify the j was to cut out all the paperwork. T only thing that the Authorized Inspe tor does is fill out a pre-addressed po card and send it to Washington. The are no other papers connected with He makes the log book entry; that's

ow let's turn to the humble little k plug that everybody takes for ted. We're fortunate to have Al ett of AC and Tom Allegretti from mpion here. I'd like to ask Al Gos- what he feels is the useful life of ark plug in the average engine.

ett: That is a very difficult ques- to answer. The "life" factor varies tly between different aircraft en- s, operators, aircraft types, fuels , etc.

tz: For example, a Pratt & Whitney What has been your experience plugs in that engine as far as " is concerned?

sett: In the Beech D18, depending he overhaul period of the operator erned, using a massive spark plug er than a fine wire spark plug, you ld get at least two runs of around 1,000 hours. Using the same engine, in a crop duster where the engine bused considerably and you have entirely different heating problem, should get 800 to 1,000 hours out he same spark plug. But you prob- have to clean it more often.

tz: Is there anything that an owner d do to prolong the life of the gs?

sett: If a spark plug is properly alled, if the operator treats his ipment properly, the spark plug of course, last much longer than n abused. If he uses highly leaded s, spark plug life will be reduced. ie operates in a very dirty area re the engine is ingesting dusts of ous types, his plug life will be cted very definitely, as well as en- life. In this case some type of air would help the situation. In instal- the plugs, if the plug is over- ued, you destroy the seal of the itself and consequently affect the range and the life of the plug. If "cigarette" or barrel of a spark is dirty when installed, then spark life will be reduced because of lting flashover and consequent ng.

tz: Tom Allegretti, could you tell what your experience has been in ing down some of these troubles?

gretti: We've found the plug life is tly influenced by temperatures at h the plug is running. In higher ered engines, ground fouling is ably the biggest problem. With er horsepower engines the spark gets colder. The colder the plug, more problems will be picked up.

Holecek, (*Hawthorne Flying Serv- Charleston, S.C.*): We've found a fine wire plug will run through ngine overhaul. It's our experience we cannot get 800-900 hours out e massive plug.

gretti: I've seen massive electrode s that have run anywhere from 300 200 hours. It depends on the igni- system.

cek: That's the point I'm making.

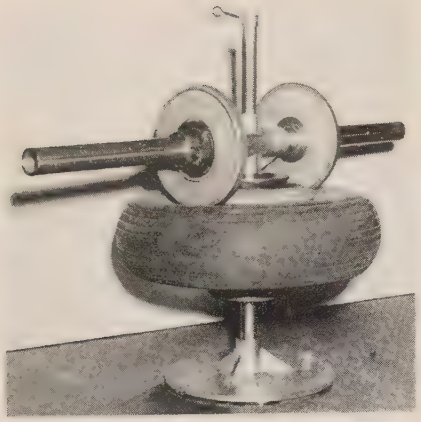
ett: Here again it depends on the ating condition. It is not too un- non to have our massive spark s go an overhaul period in a 985 ne.

Allegretti: I've seen many massive electrodes go the full run in 985s. It's one of the best mated plug-engine combinations out today. I agree with you in this respect, that it depends where the airplane is going, who's going to operate it, what the lead content is, what the operation is. There's no doubt that massive electrodes will go just as long as fine wire.

The biggest complaint I've run into is when people clean their spark plugs and put them back in the engine. Then they have problems, and it all goes back to the last person who either cleaned the plugs or installed them.

Gossett: Normally, cleaned spark plugs

(Continued on page 60)

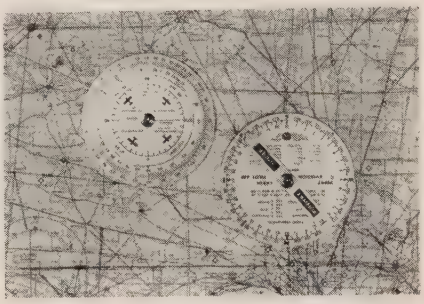


Aircraft Tire Removal Machines

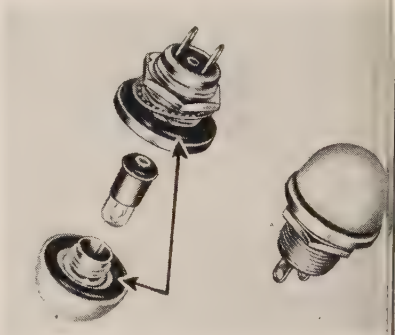
Dry Chemical Extinguisher

Battery Recorder

Portable Radio Direction Finder



Computer With Runway Finder



Watertight Indicator Light

NU-AVI-QUIP

New Machines Aid Tire Removal

Aircraft tire machines designed to loosen the bead for tire removal "peel" the bead away from the rim by means of rotating discs which apply force progressively to gently loosen, rather than "break" or tear the bead away by the application of tremendous pressure.

Two models handle all types and sizes of tires. Model P-1 is a double-acting power driven machine. Model M-1, in photo above, is hand operated.

Circle No. 35 on Reader Service Card

Computer Features Runway Finder

Novel addition to a computer is a runway finder plus various radio frequencies weather symbols and true course finder. Reverse side of the new item is devoted to time-distance and fuel problems, as well as off airways flying courses.

The computer is made on etched aluminum.

Circle No. 36 on Reader Service Card

Dry Chemical Extinguisher

A valve-in-head, cartridge-operated dry chemical extinguisher has a one-valve operation which punctures the cartridge and simultaneously provides squeeze-grip control of powder flow.

Company claims greater powder spread and range is accomplished by use of the "tri-jet" horn.

Available in 4, 10, 20 and 30 lb models, these new units have stainless steel shells making them lighter in weight, higher in tensile strength.

Circle No. 37 on Reader Service Card

Versatile Battery Recorder

A self-contained, battery operated recorder contains automatic volume control preamplifier, recording amplifier and separate playback amplifier.

The transister amplifiers are on printed circuit plug-in assemblies. Designed for a 50 ohm microphone input, full level recording is possible at distances of 10 feet or more.

Known as the Minitape, the recorder weighs 13 lbs.

Circle No. 38 on Reader Service Card

Portable Radio Direction Finder

Designed for small aircraft and boats is a new portable radio direction finder.

The DF-O-Matic Navigator is 7¾" high, 8½" wide, 6" deep. Weight is 6 lbs. A light indicates whether or not the self-contained batteries are strong enough for continued DF-ing use.

Circle No. 39 on Reader Service Card

Lighter, Smaller High Capacity Battery for Light Aircraft

A new innovation in battery design gives up to 16.3% greater power output per unit volume than comparable batteries designed for light planes. The new battery is both lighter and with less over-all height than others.

The compact, low-maintenance A and AC-54 batteries incorporat unique gas-diffusing vent plug w retains electrolyte, all new plastic tainer and cover, buried and seale tercell connectors and a specially cessed negative plate.

Circle No. 40 on Reader Service Car

Aluminum Putty for Aircraft

An aluminum putty for filling d deep scratches and holes in all ai surfaces is a combination of alum putty and a plastic hardener past

The material is applied where ne and smoothed off. Within three h it hardens into a solid rigid piec metal which can be filed down t contour of the aircraft. Weight is

Circle No. 41 on Reader Service Car

Watertight Indicator Light

A new series of splash-proof, ture-proof miniature indicator light use on exposed panels is 1%64" lon

The units contain two recessed ber "O" rings that give inconspic watertight fit between lens cap and and between mounting flange and p Wide-visibility lens caps are ava in over 10 transparent and transl colors. Units accommodate m flange base AN3140 lamps, ava for 6, 14 or 28 volt operation.

Circle No. 42 on Reader Service Car

(Continued on pa

SKYMART

the Market Place for Aircraft Parts, Equipment, and Services

SKYMART

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OVERHAUL • EXCHANGE • LEASE
ALL P&W ENGINE MODELS

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R2800 M1 & M2
R2800 C Series

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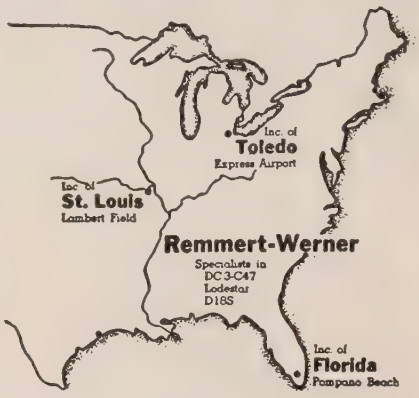
TUXEDO 7-2666



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Quality aircraft paint specialists

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Powerplant 1

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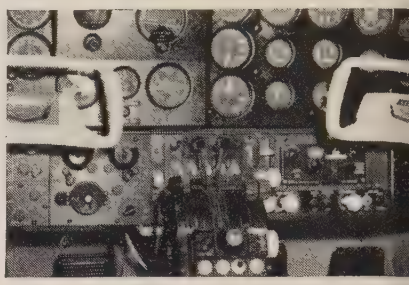

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Complete sales, installation, and service facilities for:
BENDIX • COLLINS • ARC • LEAR • DARE • NARC

Our complete radio laboratory is equipped with cially built test facilities.

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New Bendix X-Band radar test and repair facil also available.

- Around-the-clock line service and refueling.
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CAPITOL AVIATION, INC.
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FINEST AIRCRAFT MAINTENANCE

Twin Beech • DC-3 • Lodestar

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Class 1 & 3 No Limitations

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RADAR

AUTOMATIC PILOTS, NAVIGATION & COMMUNICATION SYSTEMS

Collins, Bendix, Sperry, Lear, ARC, Wilcox

NOW DEAL DIRECTLY WITH OWNERS . . .
In Stock Now for Immediate Delivery!

BEECHCRAFT C18S, D18S, E18S
One of each available. All Top Quality. Excellent value and excellent terms available.

CARGO DC4B
AIRLINE DC-3 AND/OR CARGO C-47
Both available for sale with terms or for lease with lowest rates ever.

GRUMMAN WIDGEON
G44A Models with Ranger engines, or Custom McKinnon-Hickman Conversion available as a package. Finished product without an equal. And We Mean It! ! !

EXEC LOCKHEED VENTURA
265-285 MPH FOR THE PRICE OF A BEECH
Gorgeous New Horton & Horton interior, unequalled anywhere. Send for photograph.

SIKORSKY S-51 HELICOPTERS
CAA Four-place Commercial Licensed with fresh complete overhaul. Six left, with spares. Can be purchased individually "AS IS" if desired.

GRUMMAN GOOSE
Zero time throughout. Like new. And We Mean It! ! ! New Plane Warranty.

MILITARY SURPLUS AIRCRAFT
SNJ-7 (T-6G), SNJ-4. 1 PV-2 Harpoon. 2 Douglas B-26. 1 PBY-5A.—All to be wholesaled flyable with ferry permit, and at very cheap prices. Write or call for details.

HANGARS
120 ft. x 200 ft. clear span hangar. 28 ft. headroom. All steel structure plus two-story lean-to's 20 ft. wide on the long sides. Total 40,000 Sq. Ft. floor space. Substantial piece of Real Estate.

TRADE-AYER COMPANY

ANTHONY J. MING, LINDEN AIRPORT, LINDEN, NEW JERSEY
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Will Buy
used BELL G or H model
Helicopter

Give price, details, and specifications in letter. Box #759 Skyways

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SALES & SERVICE
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EL SEGUNDO CALIFOR

We Want To Buy Two Hydromatic D18S

Will be overhauled and rebuilt to special confi ration, with speed kits, new type interior, Must be low cost, needing overhaul. Give details in first letter.

Remmert-Werner, Inc.,
Lambert Field, St. Louis, Missouri

SERVING THE INDUSTRY AS SUPPLIERS OF DOUGLAS PARTS AND COMPONENTS

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WE SOLICIT OPEN ACCOUNTS FROM WELL-RATED FIRMS

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One of the world's largest inventories of
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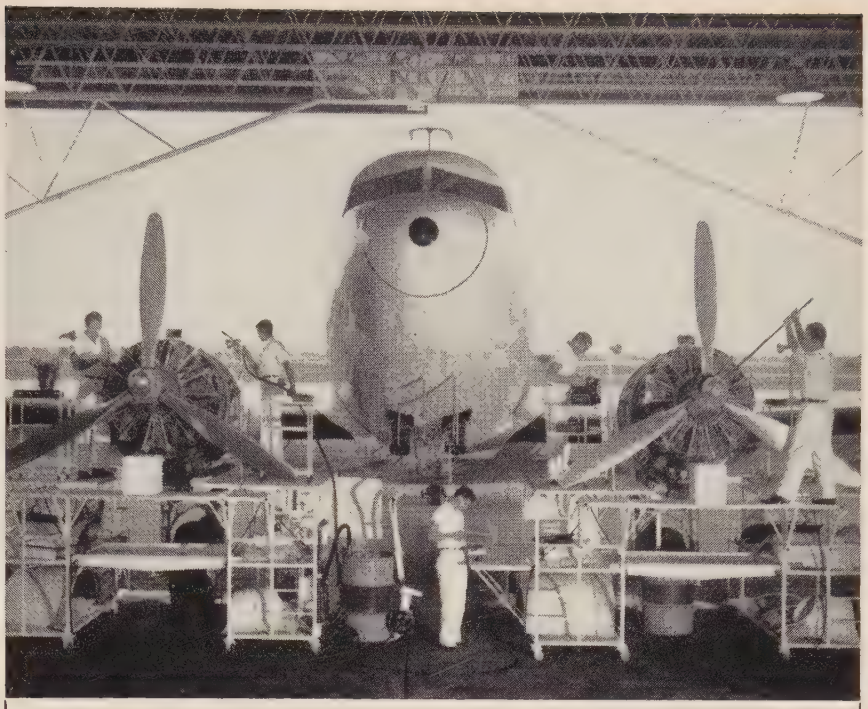


NU-AVI-QUIP

(*Continued from page* 54)

Suspended Cantilever Hangar Designed by Houston, Tex., Firm

Unique in the area of hangar designs is the suspended cantilever method developed by a Houston, Tex., firm. The cantilever method supports the hangar roof by exterior beams which are based in foundations at the rear of the building.

The pre-engineered structural design provides floor space throughout the hangar which is unobstructed by columns. Expansion of the building is possible length-wise because the end walls do not carry weight of the roof. Continuous doors on three sides of the hangar are possible.

The hangar can be built in any size and with any type of construction material, the company claims.

Circle No. 44 on Reader Service Card

Dry Vacuum Pump

A new dry vacuum pump design does not require venting to exterior of engine cowl or trailing edge of wing. The pump is CAA-approved for original or replacement installation.

The pump has capacity for artificial horizon, directional gyro, turn and bank and auto pilot. No lubrication is necessary.

The dry vacuum pump fits all standard aircraft engines.

Circle No. 45 on Reader Service Card

Underground Cable Connection for Airport Lighting Equipment

A waterproof underground connector is packaged in a four-part kit for easy, quick field installation. The new connector kit offers an economical underground connection.

The field-installed device can be separated for testing or servicing. The circuit is re-established by a plug-in method.

Circle No. 46 on Reader Service Card

Vacuum and Pressure Test Set for Aircraft Instruments and Gauges

Portable and self-contained, new equipment for field testing of aircraft vacuum and pressure instruments and gauges is now available.

Originally designed for the Bureau of Aeronautics, U.S. Navy, the standard test set contains reference instruments against which altimeters, rate of climb indicators, air speed indicators, manifold and fuel pressure gauges can be checked without removing instruments from the cockpit panel.

The unit weighs 59 lbs, is 13½" x 15" x 16½" and can be set up and operated by one man.

It contains a step-down transformer and rectifier for inverting 115 A.C. currents to 28 volt D.C. power and a carrying case cover.

Circle No. 47 on Reader Service Card

CLASSIFIED ADVERTISING

Rates for Undisplayed Classified Advertising: per word, minimum charge first 10 words $3. prepaid with order. Add 4 words if Box Num is included in lieu of advertiser's name and dress.

AERONAUTICAL BOOKS

FREE CATALOG (1957) of leading aviati supplies including Zweng Books, Navigati Computers, Plotters, Log Books, etc. A maps and charts; Books of the Sea and A Nautical supplies and general technical boo on all subjects. Pan American Navigati Service, 12021-22 Ventura Blvd., N. Holl wood, Calif.

AIRCRAFT FOR SALE

EXCEPTIONAL OPPORTUNITY
Storer Broadcasting Company
Executive DC-3 For Sale

Completely equipped 210-MPH DC-3 I RCA C-Band Radar, Sperry A-12 Autopil engine analyzer, long-range fuel syste fuel flow, DME, Pan Am doors, 9-second ge retraction, increased gross weight, low ti engines, full complement of navigatio radio equipment. Exquisite interior, new covered exterior fabric surfaces, special f facilities, 8 parachute lounge seats and three-place couches, television and ra receivers, 3 picture windows and oversiz cabin windows, all double-paned. IMMEI ATE INQUIRY URGED. Call or write: Cly C. McClymonds. Storer Broadcasting Co pany, 1177 Kane Concourse, Miami Bea 54, Florida. Phone UNion 6-0211.

CHARTS & MAPS

AVIATION Charts now available from new Chart Division. Agents for the Co and Geodetic Survey. Our service inclu Aeronautical Sectional, World Aeronauti Direction Finding Navigational Flight, Distributors for New Plastic Relief Map the United States $45.00 express prepa (Free Catalog.) Pan American Naviga Service, 12021-22 Ventura Blvd., Hollywo Calif.

MISCELLANEOUS

LETTERS AND NUMBERS—Precut ad adhering Vinyl REGALETTERS elimin masking and spraying. Available in 4", and 20". Also American flags, 8" x 13 Permanent colors. Meets CAA regulati See your Distributor or: REGAL AIR CO 500 Fifth Ave., N.Y.C.

Weather and Corrosion Resistant Paint Completes Three-Year Test

Successfully completing more th three years of testing against weath and corrosion is a new paint wh contains silicone.

The finish was applied to a li plane in 1955. Now, with more th 350 hours logged, the painted finish l proved its longevity. The plane w not polished during the period and w washed only three times. Both gl and color retention proved excelle says the manufacturer. When po marks, caused by flying gravel, w touched up, there was no appar difference between the new paint a the old silicone-containing finish.

Circle No. 48 on Reader Service Card

IEDMONT AVIATION, INC., Wins-alem, N. C., rewired generator system C-3, owned by R. J. Reynolds Tobacco and flown by their Chief Pilot Herb .

anagement Service's Chief Pilot, Wilson, had both their DC-3s in for r inspection.

ell Aircraft had electrical and radio m rewired, new interior, picture win- installed, fuel tanks reworked and hr inspection on their DC-3. Chief is William Powell.

ocahontas Fuel Co. had 100-hr in-ion on their D18s, flown by Bob ndsen.

ennis Freight Lines' Pilot, George , had 100-hr inspection performed on company's E18s.

agnavox Corp.'s Chief Pilot, Steve ards, had new elevators and ailerons lled on their DC-3.

oland Co.'s Chief Pilot, Karl Styne, their Lodestar in for annual inspec- and landing gear change.

lot Freight Carriers' D18S was in 00-hr inspection. Pilot is Buck Teague.

nion Bag Co. had overhaul of land-gear performed on their DC-3. Pilot is . Von Holland.

iamond Alkali had miscellaneous re- performed on their DC-3. Chief Pilot oy Black. Hank Synamek, Chief of tenance attended the operation.

rginia State Police had 100-hr in-ion performed on their PA-22.

ercules Powder Co.'s Chief Pilot, both wings exchanged on their DC-3. Pilot is Owen Mayfield.

ockheed Aircraft's Lodestar was in 00-hr inspection. Chief Pilot is Lloyd s.

roctor and Gamble Distributing Chief Pilot, Nelson Rooker, flew the any's DC-3 in for new interior, new ior painting, including day-glo, 4000-hr ction, radome modification and misc. rs.

ationwide Transport had their DC-3 r 4000-hr inspection. Chief Pilot is Renecker.

XECUTIVE AIRCRAFT SERVICE, , Dallas, Texas, completed 100-hr in-ion on Gulf Oil Corp.'s Lodestar ght in by pilot Stein Lee.

ars, Roebuck & Co.'s Lodestar was ght in by pilot Arch Hunter for An- Inspection, compliance of AD notes on extinguisher system and main gear, repairs, and painted rudder and wing nd cowling with Day-Glo high inten- paint.

d W. Richardson's DC-3 had 100-hr ction, compliance of fire extinguisher tin and misc. repairs. Pilot is Ed trong.

ene Grande Oil Co.'s DC-3 is back enezuela after major overhaul and rnization which included installation rings with outer panel fuel tanks ing old center section tank area avail- for radio equipment installation & ge), squared wing tips, aileron gap re kit, main gear wheel well doors, wheel fairing, modified cowling, new exhaust system, Safe Flight speed control system, Edison fire detectors, 250 watt retractable taxi light in lower surface under nose, new instrument panel, four picture windows and enlarged other four windows, enlarged cockpit side windows; and new cabin interior including new soundproofing, headlining, side panels, chairs, tables, and cabinets; new cold air system; recovered elevaters; and modified hydraulic system and lowered reservoir. Chief Pilot is V. "Red" Irwin.

The Dow Chemical Co. (Michigan Division) DC-3 was in for Periodic Inspection and misc. repairs. Chief Pilot is Russell Purchase.

■ **REMMERT-WERNER** installed an aileron gap strip on the Peabody Coal Super-92 DC3 during a 100-hr inspection in the new Wrap-Around Shop. Bob Boyanovsky and Bill Frame are the pilots.

Chemstrand Corp. had a new interior installed during a 1000-hr inspection and overhaul of their twin Beech. Ron Breckenridge is the pilot.

S. M. Scaife DC3 came to Remmert-Werner in St. Louis for installation of extra outer wing fuel tanks. Jim Leonard and Ralph Rathgeber are the pilots.

Monsanto Chemical Co. had a double engine change of their R1830-75 engines on a DC3. Ralph Piper is chief pilot.

Schenley Industries was at Pompano Beach for one of the first one day 100-hr inspections in R-W's new Wrap Around Shop. Gus Rahm is pilot.

CAA has awarded contract to R-W for the manufacture of 28 DC3 radomes for CAA DC3 to inspect and monitor the nation's airways and radar. This is in addition to 22 similar radomes furnished by Remmert-Werner in 1957, and includes hinging of radomes for accurate antenna tuning, and swingaway scanner mounts for easy instrument panel access.

Heckett Engineering's Super-92 DC3 came to Remmert-Werner in St. Louis for wing removal and overhaul, during a 100-hr inspection in the Wrap-Around Shop. John Gildea is the pilot.

Mississippi River Fuel Co.'s Lodestar was at Remmert-Werner for an engine change. Ralph Primo is the pilot.

Pioneer Tool's Twin Bonanza had an engine change at Remmert-Werner in St. Louis. Erv Kokes is the pilot.

■ **PAN AIR CORP.,** New Orleans Airport, La., completed modifications to Orinoco Mining Co.'s Grumman G-21. Plane returned to home base in Venezuela.

Esso Shipping Co.'s Douglas B-23 had an engine change and periodic inspection.

John W. Mecom Co.'s Twin Beechcraft received overhaul and repair work.

Freeport Sulphur's two Sikorsky S-55 helicopters were stripped and painted.

Halliburton Oil Well Cementing Co.'s Grumman Goose G-21 is receiving metalized wings and overhaul.

■ **POTTER AIRCRAFT SERVICE, INC.,** Lockheed Air Terminal, Burbank, Calif., installed three-bladed Hartzell props on Dept. of Interior's Grumman G-21 and Fred J. Early Co.'s Beech D-18S.

Fluor Corp.'s Lodestar returned to service after 100-hr inspection. Chief pilot is Harry Conover; co-pilot, Bill Goodman.

■ **PLANESERVICE, INC.,** Div. of The Norman Larson Co., Van Nuys Airport, Calif., completed radio package and autopilot installation in the newly purchased Super 18 Beechcraft for Lockheed Missile Systems Division. Collins equipment was a predominant feature of the package including the Collins Integrated Flight System.

Walter Martindale of Martindale Book Stores flew in for repair and calibration of his Mitchell Co-Pilot.

Pacific Automation Products brought one of their Bonanzas in for complete rewiring of existing radio.

Ace Drill Bushing had repair and calibration made of their Mitchell Co-Pilot.

Edgerton-Germeshausen & Grier of Las Vegas flew in for repair and calibration of their Narco radio.

■ **GARRETT CORP.'S AIRESEARCH AVIATION SERVICE** division, Los Angeles International Airport, has completed a newly-designed executive interior for International Business Machine's Convair 340B. This included installation of a high fidelity stereophonic tape reproduction sound kit, an IBM dictaphone transcriber and recorder, and IBM electric typewriters. Also installed were auxiliary wing fuel tanks, an auxiliary power unit, and Convair 440 speed-sound kit. Extensive radio modification work was done and a custom designed exterior paint scheme applied. Flight Operations Manager Chuck McKinnon and Chief Pilot John Powers were in with the aircraft.

Consolidation Coal Co.'s B-23 was in for 100-hr inspection, annual re-license, inspection and repair of center section fuel tanks as well as long-range wing tanks, recovering of all control surfaces, overhaul of landing gear system, installation of short stack exhaust system, extensive radio modification work, new headliner and other interior refinements, and a complete custom designed exterior paint job. Pilots are Lou Ramey and Andy Soska.

Republic Aviation's DC-3, piloted by Pete Collins, underwent complete radio and electrical rewiring, extensive radio modification work including installation of edge-lighted panels, installation of 200-amp generators and system rewiring, squared wing tip kit, and engine fire detector system in addition to receiving RCA AVQ-10 radar and a new executive interior, previously reported.

General Electric had electrically operated folding stairs fabricated for installation on a Constellation type aircraft.

■ **PACAERO ENGINEERING CORP.,** Santa Monica Airport, Santa Monica, Calif., completed miscellaneous service work on Solo Cup Co.'s Learstar.

Potlatch Forests, Inc.'s pilot, Clyde Martin, flew in their Lodestar for conversion to a Learstar Mark II.

British American Oil Co.'s Lodestar came in for conversion to a Learstar Mark 1A. Jack McVicar is chief pilot. This will be their second Learstar.

Plymouth Oil had minor service work

performed on their Learstar. Jim Hickerson is chief pilot.

■ **SOUTHWEST AIRMOTIVE CO.,** Love Field, Dallas, Tex., completed a double engine change, paint trim and misc. work on Anderson Duham's newly-acquired Lockheed Lodestar. Pilot is Charlie Viosca; co-pilot, mechanic is Hollis McAdams.

Pauley Pan American Oil Corp.'s D18S was brought in for double engine change. Pilot is John Pancallo.

Magnolia Petroleum's D-18S Beech was in for single engine change.

Shamrock Oil and Gas had its D18S Beech in for 100-hr inspection. Pilot was Tom Smith.

Dresser Industries' PV-1 was brought in for 100-hr inspection by Chief Pilot Larry Montigny.

Western Drilling Co.'s D18S Beech was brought in for misc. repairs by Pilot Jinks Farnall.

The Corps of Engineers' DC-3 was in for a 100-hr inspection. Pilots are Jim Smedley and Ray Warren.

Cummins Engine Co.'s DC-3 was brought in for 100-hr inspection. Pilots are Bill Pruner and Phil Kaufeld.

Ideco's Aero Commander was in for a 100-hr inspection and relicense. Pilot is Virgil Head.

Magnolia's Chief Pilot Sam Willis had the Magnolia DC-3 in for double enigne change.

Union Producing Co.'s D18S Beech was in for engine change. Pilot is Cotton Jetter.

The Texas Co.'s Cessna 310 was in for double engine change and annual inspection. Pilot is Ralph Hall.

T. D. Humphrey and Sons' D18S, "The Skipper," was in for double engine change, major re-work and a new interior. Pilot is Carl "Stormy" Rodereick.

■ **SPARTAN AIR SERVICES LTD.,** Ottawa, Canada, installed ARC 21A ADF on Royal Canadian Mounted Police Otter CF-MPP.

Commander Aviation's Aero Commander 680 Super CF-JOK, under contract to the Canadian Department of Mines & Technical Surveys, had installation of magnetometer, Aeropath vertical camera, Sperry C4 Gyrosyn compass and Computing Devices of Canada Decca navigation equipment. Spartan pilots Ken Fraser and Cliff Fielding will fly the aircraft on a survey this summer in the Canadian Maritimes.

A DC-3 bearing Portugese registration CS-LCY, being ferried from the United States to Portugal by Steward-Davis, was in the Spartan plant for component changes and snag clearance before the flight across the Atlantic. Pilot was Wynn Cronjie.

Margaret Carson of Ottawa had her Stinson CF-GNU worked on by Spartan personnel to clear up electrical system trouble.

Department of Transport's DC-3 had installation of a Bendix-Computing Devices of Canada Decca Mark 8, as well as a Dectra. The aircraft will be used for checking out the new St. Lawrence-Quebec Decca chain and the Newfoundland end of the Trans-Atlantic Dectra installation.

Spartan's Helicopter Division completed four Spartan-designed flight landing gear handling dollies; three sets of Spartan-designed cargo racks for installation and Spartan heater kits which include Stewart Warner Southwind 940-B24 heaters for the new Canadian Department of Transport Bell 47 J's. Similar heater kits have also been installed in the two new DoT Bell 47G's.

Royal Canadian Navy HTL-6 is undergoing a 300-hr inspection and repairs, bringing it up to the latest modification status.

Western Helicopters' Bell 47s CF-IKS and CF-IKR underwent complete 600 hour checks.

Department of Transport's Bell 47s CF-GXG abd CF-GXS had 600 hour component checks.

Periodic servicing was done on several Bell 47s of the Hydro Electric Power Commission of Ontario. And minor work was done on RCAF and RCN Bell 47s.

Round Table

(Continued from page 53)

will work just as well as new ones although their useful life is, naturally, somewhat shortened.

Weitz: What about putting the plug in the engine and just letting it stay there until it malfunctions?

Gossett: We do not approve of this

KARL E. VOELTER, *CAA, pointed out that chief concern of general aviation people is the cost of servicing small engines.*

technique. "Malfunction" is a word with serious repercussions in this business. For instance, if a spark plug is left in until the electrode, in the case of your nickel alloys, erodes to a point where it will glow, then you will get into a pre-ignition condition. Such malfunction is too much for most operators. This, of course, is an extreme. Many lesser evils exist that make reasonable periodic replacement desirable. A reasonable rule of thumb is that when 50% of the ground electrode has eroded, then the spark plug should be replaced.

Allegretti: In the DC-3s with both Wrights and Pratt & Whitneys, airlines get anywhere from 250 to 540 hours between cleanings with no problems.

Weitz: To summarize, in a maintenance facility there must be a high order of integrity because the aircraft operator and owner depends on it for the correct information. The operator has to understand what he's buying. On inspection standards, there is also a big need for established standards for the health of the industry at large. There is a lot more customer education to be done on the part of industry. ✈

Greenhouse Patter

By "Torch" Lewis

The Brothers Bertolet did it aga 250 planes of all sizes and descripti descended upon the annual June me ing of Reading Aviation Maintena and Operations Forum. An I do know jest what church Sim and Bertolet attend, but it might behoo us to find out as there never were t more beautiful days back to back.

At first there didn't seem to be many people there as the exhibits a aeryoplanes was spread out all over acres. However, bout 6 pm the co started poppin on the lawn in front the offices and the place was craw with people. Luminaries is the wo They was 50 watt luminaries a they was 1,000 watt luminaries a nothing could be heard by 12 pm cept the poppin of the circuit breake I saw Bill Lear, Gil Quinby, Gill Ro Wilson, Skeets Coleman and Bill C rad. I like to fell over Lois Her Curly Korb was there with full cr as was Bill Conrad and George Had way. Francie Nolde was on the Co mercial undersecretary's arm. Th were many, many more. I did not Bill Lawton or Bill Maas of that ot magazine, and I understand they w both busy at nefarious business in C City and Paris respectively.

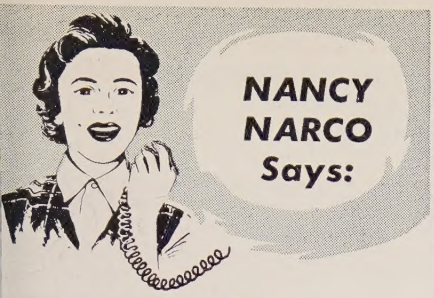
In a moment of mental abberation Bertolet ast us to judge the airpla so I brought along my mouthpi "Beetle Brow" Riggs who can cop a Ventura pretty good when he lollygaggin on the mike. We H agreed that never had we seen such assemblage of beautiful business craft making judging more difficul

BACK HOME AGAIN—I have s boats, driven boats, watched boats even rowed a few since I was a r nose. I have flewed in hunnerts of fl machines of varying sizes and sha since weaning. How long will it b wonder, before I can look at an coming aircraft at night, see a gr light and instantly know that I looking at his right side or starbo or is it port?

INDIANAPOLIS—Left Noo Y for won stop at St. Louis. The A now have peripheral control for cer flights on certain airways which m that you talk only to the ATC Cen instead of Insac stations when proc ing IFR. Most centers are not too l with the ole weather reports so you to contact Insacs to get weather. had proceeded nearly 300 miles be it suddenly dawned on us that we not received an altimeter setting s departure. Fortunately we were para ing the isobars so there wasn't a ra difference, but there could have h Moral: Check the altimeter se often. Index: In your head, stupid!

We note with interest that the American ALPA boys are as $48,000 top captain's pay for drivi jets. Why that's almost twice that w the average business pilot is ma Well, don't you make $24,000?

See you in Philly next month.



NANCY NARCO Says:

HREE RECEIVERS?

ime was when a second, separate com-
unications radio was considered primarily
; an emergency precaution in case your
egular radio went on the blink. Now the
oncept has changed completely and a sec-
nd VHF transmitter and receiver is just
out a necessity, especially under IFR con-
itions. Not only that, but the thinking has
ow extended to the desirability of three
HF receivers and two transmitters in what
as come to be known as the "two and a
alf" concept, so named because it first was
orn with a combination of two complete
apphire 1016 all-channel VHF units plus
half" of a 1016 comprising only the receiver.

How come three receivers are now con-
sidered about right and not overly
plush in a modern business airplane—
be it a 180 or a Convair? Well, let's
say you're coming into a busy terminal
IFR, which calls for working the Center
or Approach Control. That means
you're tying up one receiver and trans-
mitter on their special frequency which
won't make the VOR or ILS needle
even sit up and take notice.

n a few minutes you're going to come up
n the outer marker and you're busy enough
ithout having to change frequencies, so
ou want a second VHF receiver all set up
or the ILS frequency. And a little before
nat you have to switch from Approach Con-
ol to Tower frequency so a third receiver
re-set for Tower communications will
ase the transition and cut down cockpit
onfusion.

Or maybe your transition to the outer
marker is from the VOR, so that means
you want one receiver tuned to Approach
Control or Tower, one receiver to the
VOR and a third one to the ILS—all of
them working at the same time.

Cou're really in high clover with such a
'two and a half" system when you see the
ystems engineering job done by a good radio
nstallation shop. With a single console of
requency selectors and switching controls
ou can have complete command of the vari-
us radio functions at your fingertips. You can
et up frequencies you want in advance, acti-
ating either receiver or transmitter or both,
y flipping appropriate function switches
such as when changing from Approach Con-
rol to Tower to Ground Control.

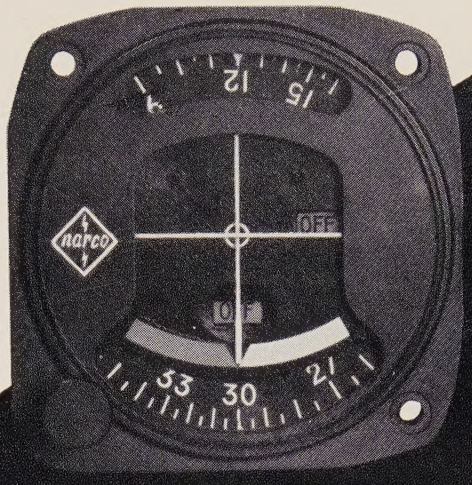
Sure makes things a lot easier.

Regards,

Nancy

NARCO • Fort Washington, Pa.

NEW! from NARCO



narco CS-5 Cross Pointer for High Accuracy VOR/ILS Navigation

PLUS Glide Slope Indicator

Now Narco offers this six-in-one navigation presentation for use with the Narco VOA-3 VOR/LOC converter which can be attached to your Sapphire 1016/1016A or Narco Simplexer VHF receiver.

In one simple, compact, panel-mounted instrument you get VOR/ILS localizer guidance, glide path indication, TO-FROM flag, selected and reciprocal course information plus fail-safe flag alarms.

The new CS-5/VOA-3 combination gives you a deluxe, super reliable basic VOR/ILS navigation system with a high degree of accuracy for which Narco equipment is already justly famous. When used with Narco Sapphire equipment, you have the added advantage of quick, automatic crystal-tuning to the station you want.

DUALIZE YOUR OMNI

The Narco CS-5/VOA-3 is the perfect answer to the growing requirement for two separate Omni systems, for added safety and position indication over the increasing number of VOR intersection reporting points. If you already have a basic Omni-navigation system plus auxiliary communications equipment such as the Sapphire or Simplexer, merely add the CS-5 indicator system. Added weight, only 4 pounds plus glide slope receiver.

CS-5 indicator with VOA-3 converter $685

CS-3A—Narco also offers the CS-3A VOR/LOC indicator which has all the features, accuracy and reliability of the CS-5 with the exception of the glide slope indicator and flag.

CS-3A indicator with VOA-3 converter . . . $485

For Lowest Cost Dual Omni, consider the Narco VOA-2 Omniplexer — VOR converter attachment for the Narco Simplexer. Gives you the added safety and advantages of a secondary navigation unit at minimum cost. **Complete, only $195**

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See your Narco distributor or write for information on this fine Narco equipment.

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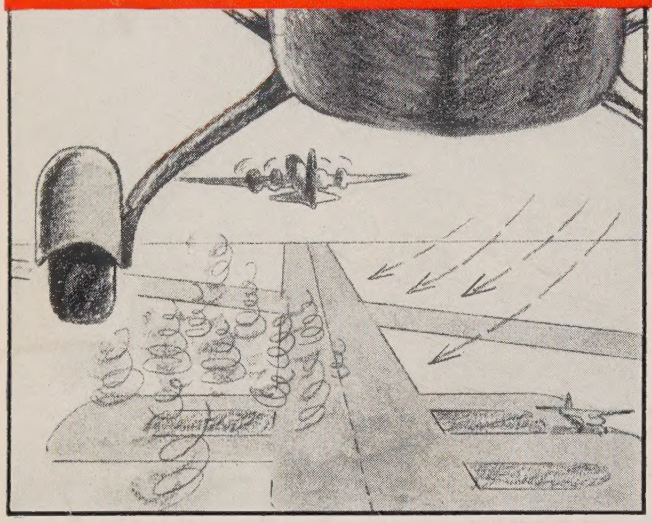
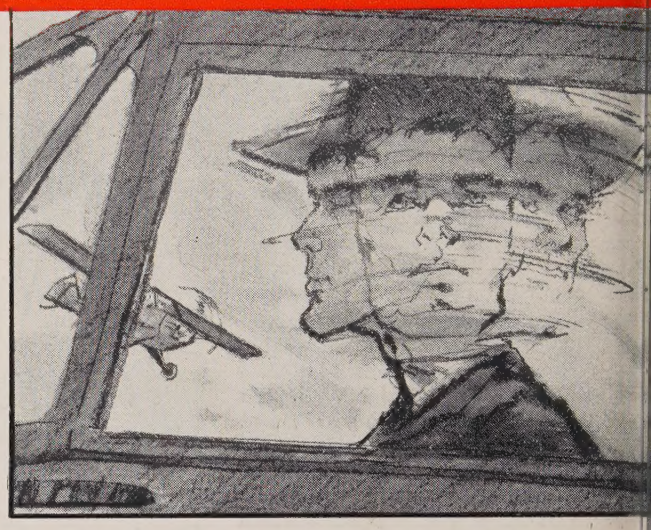
WING TIPS



PROP WASH. As you know, when the giant four-engine planes of today take off, they create tremendous air turbulence, or prop wash. You're well aware of the havoc this can cause small planes, if you've ever tried to land one on the same strip, under these conditions. Suggestion: to be on the safe side . . . come in on the windward – or clear – side of the strip.



SKY WATCH. Everybody knows that boredom causes acci dents. Since this is particularly critical in the air, it's wise pilot – no matter how experienced he may be – wh makes a constant effort to keep alert: checks his instr ments frequently, studies the sky for weather clues a other aircraft. When accompanied by others, it pays organize a sky watch.

CONVENIENCE. That's a word almost synonymous with air travel . . . a popular reason why more and more flights are being flown by more and more private planes each year. It's the very same reason Esso Aviation Credit Cards are becoming more popular, too. Having one is your passport to charge-account convenience. With an Esso Aviation Credit Card, you can charge gasoline, oil, and lubricants *plus* tire and battery service, landing fees, overnight in-transit storage and minor repairs.

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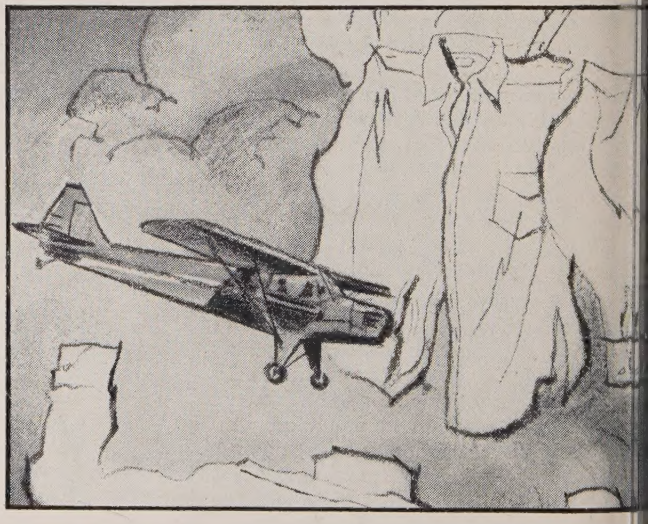

WHITE ISN'T RIGHT. Did you know that light-colored shir reflecting in the windshield, particularly at night, can gi the illusion of clouds? With air lanes as crowded and fas moving as they are today, it's a good idea not to wear an thing in the cockpit which might interfere with visio Therefore: white just isn't right!

REMEMBER. For "Happy Flying". . . look for the famou Esso Sign, trademark for more than 600 dependable Es Aviation Dealers.